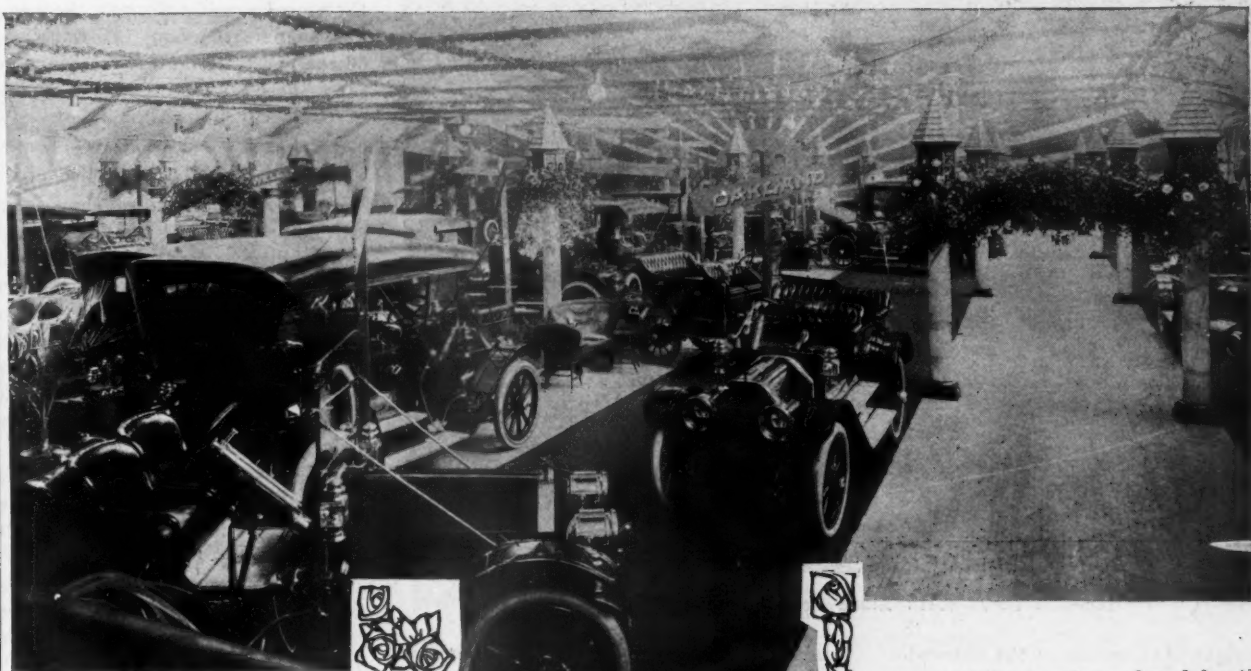


MOTOR AGE

FIRST HALF OF THE QUAKER SHOW NOW ON



PHILADELPHIA, PA., Jan. 15—Jack Frost came near putting a damper on the opening of the ninth annual show of the Philadelphia Automobile Trade Association, at the Third Regiment armory, this evening, and only for the energetic work of General Manager Beck and the show committee the opening hour would have shown an exhibition 50 per cent shy of completeness. As it was, several out-of-town exhibits had not arrived at the hour of opening, and a few which are to be brought in toto from the Madison Square garden show were, of course, not released in time. The hour of noon on Monday will, however, see everything in place and plain sailing ahead for the remainder of the week, when the entire floor space will be rearranged for the second week's exhibits.

Chaos was the only word that would describe the condition of things in the armory at 4 o'clock this afternoon; but with the assistance of the members of the association—every exhibitor during the first week is on the rolls—the hall was in speck-and-span shape when the opening

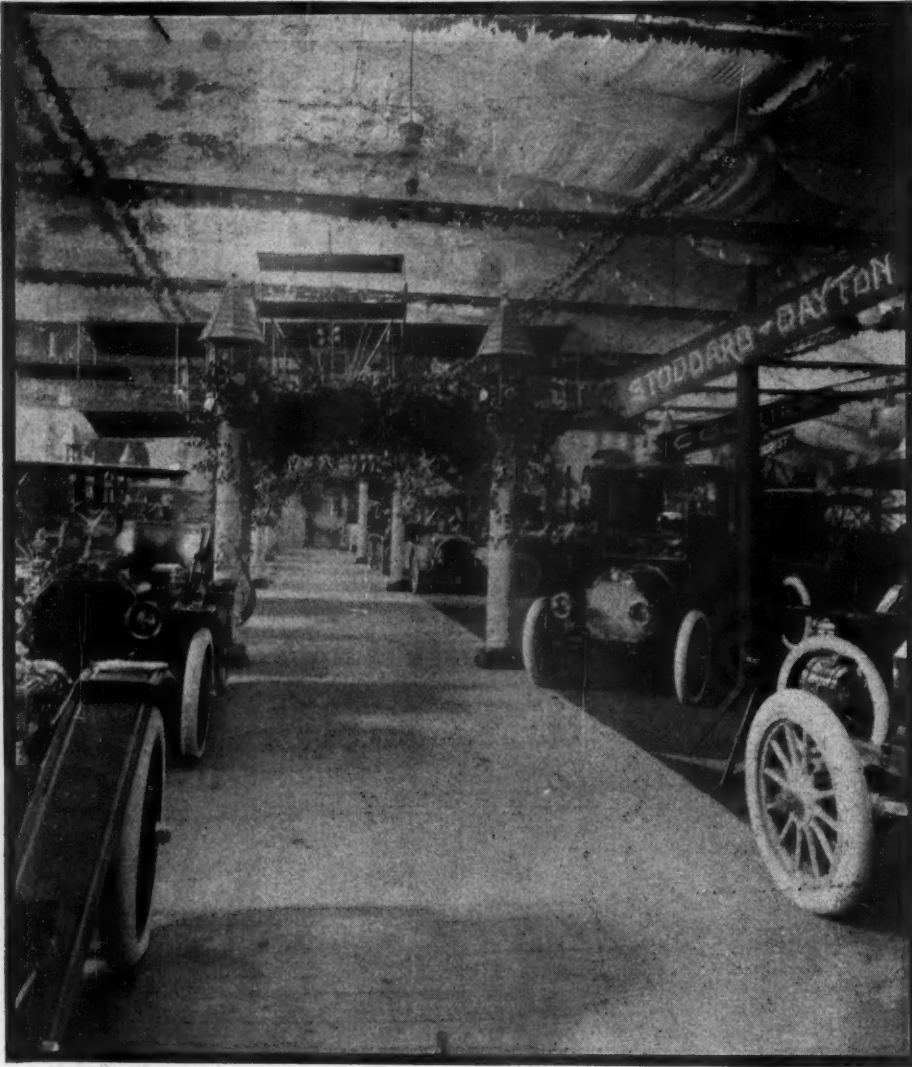
EXHIBITORS

Adamson, Prescott, Columbia and Reo Automobile Sales Corporation, Peerless and Cadillac
 Bergdoll Motor Car Co., Bergdoll
 Chadwick Eng. Wks., Chadwick
 Ford Motor Co., Ford
 Foss-Hughes Co., Pierce-Arrow
 Gantert, G. Hilton, Stearns
 Gawthrop & Wister, Elmore
 General Motor Car Co., Lozier
 Harper, D. Walter, Stanley Steamer
 Hills Motor Car Co., Royal Tourist
 Locomobile Co., of America, Locomobile
 Longstreth Motor Car Co., Pullman and Alco
 Matheson Automobile Co., Matheson and Everitt 30
 Maxwell-Briscoe Philadelphia Co., Maxwell
 Motor Co., Premier
 Olds-Oakland Co. of Pennsylvania, Oldsmobile and Oakland
 Packard Motor Car Co., Packard
 Penn Motor Car Co., Mitchell
 Spalding, A. G., & Bros., Stevens
 Sprinkle, W. P., Overland and Marion
 Standard Motor Car Co., Middleby and Velie
 Stoyke-Vogel Auto Co., American
 Stoddard-Dayton Auto Co., Stoddard-Dayton
 Studebaker Brothers Co., Studebaker
 Twining, Thomas M., Regal-Detroit
 Tioga Automobile Co., National and Hupmobile
 West-Stillman Motor Car Co., Pope-Hartford
 White Co., White
 Winton Motor Carriage Co., Winton

bars of the overture played by the Third Regiment band crashed out at 8 o'clock. The only thing that marred the general effect was the few bare spots where exhibits are not yet installed.

There have been crowds at local shows in former years; but never anything which approached in density the multitudes which thronged into the armory tonight. It was a veritable jam, which overflowed onto the bailiwicks of the exhibitors, and interfered materially with the smooth flow of eloquence. It was a good-natured crowd, however, and it wasn't to be expected that much in the way of business could be done on the opening night, anyway. The prevalence of dinner coats and spike-tails—not only among the workers, but among the visitors as well—gave evidence that society has taken the show under its wing, and will have a common gathering place during the next fortnight where they can discuss the motor to their hearts' content.

Apart from torpedo bodies, there is nothing revolutionary or calculated to excite particular interest in this year's models. The thirty separate exhibits crowded under the armory roof this week include forty different makes of pleasure cars. Of these



LOOKING DOWN MAIN AISLE OF THE SHOW BUILDING

twenty-eight have motors of the four-cylinder type, the remainder being of the six-cylinder variety.

The show committee is composed of J. A. Wister, chairman; James L. Gilney, W. J. Foss and General Manager J. Henry Beck.

All former efforts of local promoters in striving after superior decorative effects have been outclassed by the splendid combination worked out by Decorator Charles M. Simpson. The main color scheme is blue-and-white. Overhead and along the front and side walls this combination prevails, the panels on the walls being punctuated at intervals by Corinthian columns of pure white extending to the roof, the ugly beams and braces of which are hidden from view by graceful festoons of blue and white bunting, the former representing heaven's blue vault, the white the fleecy clouds.

The entire back wall of the armory is taken up by a startlingly original and effective sunburst, the rays of which are made up of scarlet, orange, yellow and white bunting, the sun being represented by a huge gilt ball on which is spread the simple legend "1910."

The three aisles are marked on either side by rows of Carrara marble columns, each surmounted by a Swiss chalet in

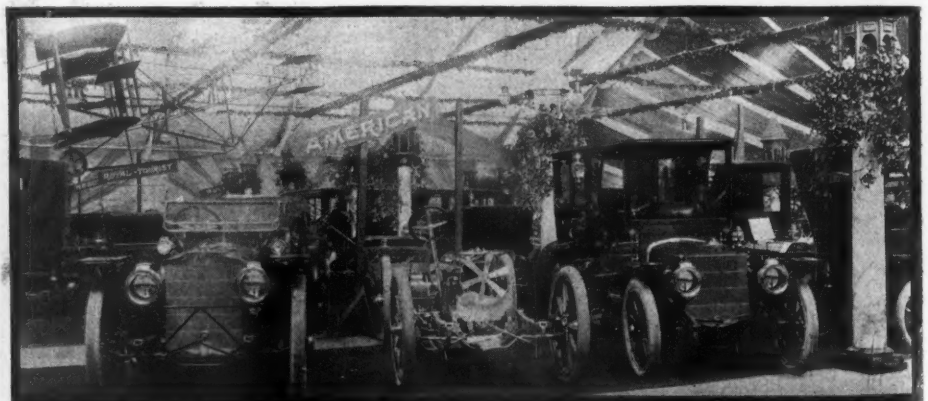
miniature and filled with growing plants. Each pair of columns is connected by a graceful trellised arch extending over the aisle, the intertwined flowers on which help along the outdoor garden effect which the designer had in mind. Box hedges separate the various exhibitors' spaces, which are marked by dark green rustic signboards set at an angle on 12-foot uprights of the same color. The lettering on the boards is silver-white and contrasts well with the dark background. The carpeting of dark green carries out the lawn idea, the outdoor effect being still further added to by

the dark-green rustic benches and chairs at each booth.

The lighting is especially well done. Thirty big arcs, the same number of Welsbach clusters, with countless long festoons of white electric bulbs setting forth the beautiful decorative effects to excellent advantage.

To night's opening saw several of the exhibits incomplete, some of the cars to be displayed being at the Madison Square garden show, and will not be installed until Sunday afternoon. When the doors are thrown open at noon on Monday there will have been crowded into the armory 123 complete cars and twenty-one chassis. On the opening night the crowded condition of the majority of the displays, with the crowd surging through the 8-foot aisles and encroaching onto the working ground of the conversation artists connected with each booth, again brought forth the wail: "When will Philadelphia have a convention hall of suitable size to house an affair of this kind?"

The decision to run the show for 2 weeks was actually forced on the committee by its inability to secure an exhibition building anywhere near the dimensions required for the annually increasing size of the show. The Second Regiment armory, the largest building of the kind in the city, could not be engaged this year owing to the structure having been taken over by the state of Pennsylvania, a law of the commonwealth preventing the renting of any of its property for any purpose whatever. The First Regiment's quarters, although ideally located, were out of the question, being entirely too small. This process of elimination left the Third Regiment armory as the only available building in the city. The main drill floor measures but 172 by 144 feet. With less than 15,000 square feet at its disposal, including aisle space, and with more would-be exhibitors of pleasure cars alone than could be accommodated, the show committee hurriedly decided to run the exhibition for 2 weeks, the first to be devoted to pleasure cars alone, the second to commercial vehicles, electrics, motor cycles and accessories. Even this arrangement did not provide sufficient space for the pleasure-car exhibitors, and a dozen or more



INTERIOR APPEARANCE OF THE SHOW—AEROPLANE EXHIBIT IN BACKGROUND

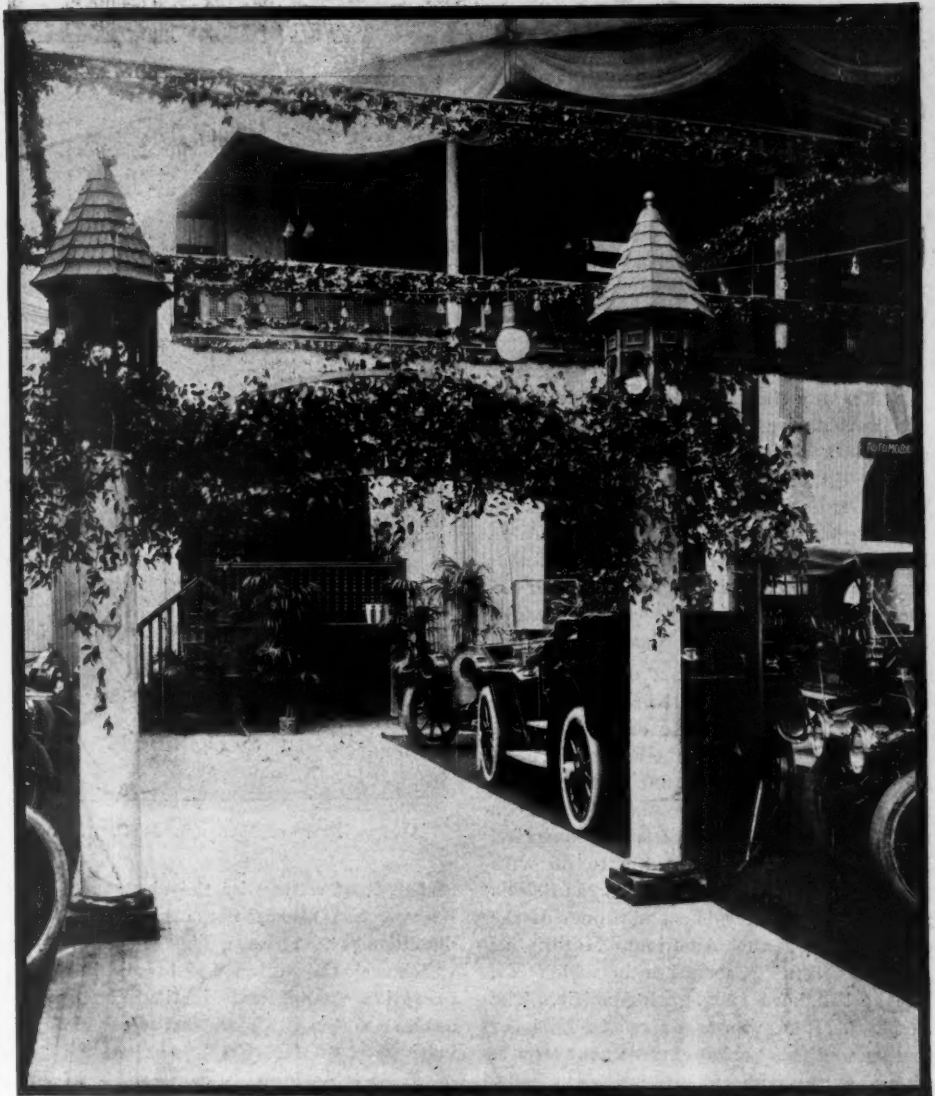
of them will be relegated to the second week. In assigning the space, of course, the preference was given to the members of the Philadelphia Automobile Trade Association, who are bearing the heat and burden of the management of the exhibition. Most of the exhibitors who failed to get in with the first week's elect have taken the situation philosophically, being well aware of the impossibility of satisfying everybody.

The management has made a hit by setting apart certain portions of the first balcony for the use of the various local clubs—the Quaker City, Philadelphia, Germantown, Century and Delaware County. These were thronged throughout the opening night by the club members—the balcony being a famous vantage-point from which to look down upon the crowds below and get a bird's-eye view of the whole scene.

Aside from the size, there is nothing to distinguish one booth from another except the wording on the signs. Uniformity is rigidly preserved, and no extraneous decorations have been allowed. Some of the displays are of a magnitude worthy of a national show. The Packard, Chadwick, Peerless and Cadillac, Locomobile, Olds and Oakland, Pullman, Elmore, White, Winton, Stoddard-Dayton, Columbia and Reo, Premier and Bergdoll displays occupy space to the limit allowed by the committee. In point of the number of cars exhibited the Ford display is especially prominent with two touring cars, a T roadster, a town car, a landaulet and a coupé—all model T's. The Olds-Oakland display includes four each of the Oldsmobile and the Oakland—two touring cars, roadster and landaulet of the former, and two touring and the same number of roadster models of the latter.

Another most comprehensive display is that of the Maxwell-Briscoe Co., no fewer than six cars being crowded into the rather limited space—model E and model G touring cars, three model Q's and the model AA, or baby Maxwell.

Torpedo bodies are much in evidence—the Winton and White and the Studebaker-Garford gunboat coming especially under the observation of the crowds. The White gasolines form a particularly interesting portion of the company's exhibit.



SHOWING BALCONY PROVIDED FOR PHILADELPHIA MOTORING CLUBS

The Winton exhibit—all sixes, of course—is one of the finest under the armory roof.

The Thomas, Chadwick, Lozier, Peerless-Cadillac, Overland-Marion, Premier, Royal Tourist and Stevens-Duryea exhibits all have four models on exhibition, most of them in addition having a highly-polished chassis also displayed. It is rather unfortunate that the exhibitors should have been compelled to do so much crowding in order to set forth even a moderately comprehensive exhibit of their goods. But

"needs must when the devil drives," and all hands are doing the best they can under the circumstances.

Home shows will be all the rage along the row during the next 2 weeks. The first-weekers at the show will hold forth at their several row establishments during the last half of the exhibition; the second-week contingent will have open house at their North Broad street homes throughout the first week. The outsiders—those who could not get in during the first week and wouldn't take space for the second—will put in a whole fortnight receiving guests at their branch houses and agencies. Among the latter are the Theobald Motor Car Co., Acme; Franklin Motor Car Co., Franklin; J. M. Quinby & Co., Pennsylvania, Simplex and Isotta; Chalmers-Hipple Co., Chalmers-Detroit; Buick Motor Car Co., Buick; Oxford Automobile Co., Gaeth and Brush; Philadelphia Automobile Co., Apperson; Selden Motor Car Co. of Pennsylvania, Selden; Palmer & Singer Co., Palmer & Singer; Jackson Motor Car Co., Jackson; Hoopes Motor Co., Crawford and Rambler; Continental Motor Car Co., Speedwell and Parry, and Penn. Automobile Co., Paterson—30.



HUGE SUN MAKES EFFECTIVE BACKGROUND FOR DISPLAY PURPOSES

Reeves the New A. L. A. M. Leader

Chicago Meeting to Settle Future of the Independent Organization—New York Gossip

NEW YORK, Jan. 16—Alfred Reeves now is the guiding spirit of the Association of Licensed Automobile Manufacturers, following his election to the general managership of the Selden body at a meeting of the executive committee held last Thursday, which followed a session of the A. M. C. M. A. executives the day preceding at which time Mr. Reeves tendered his resignation as general manager of the organization with which he has been connected, for the last 2 years and which he was instrumental in making so powerful. Mr. Reeves now is in charge of the A. L. A. M. affairs and associated with him as assistant general manager is Coker F. Clarkson, who retains the position which he has held during the past year.

This switch on the part of Mr. Reeves was generally expected, it having been the gossip for the last couple of months that the position was his for the asking. Therefore, when the formal announcement was made last week that the change had been made it did not occasion much surprise. However, it has considerable to do with the present situation as regards the Selden patent and probably is a forerunner of the dissolution of the American Motor Car Manufacturers' Association in which Mr. Reeves has been the fighting spirit. The A. M. C. M. A. was organized in 1905 for 5 years and this period expires next month, at which time the annual meeting will be held in Chicago. There the question will be settled as to whether or not it is best to reorganize or to shut up shop. Inasmuch as many of the most prominent concerns that heretofore acknowledged allegiance to the A. M. C. M. A. have joined the A. L. A. M. it is probable, Dame Rumor says, that at the Chicago meeting the A. M. C. M. A. will pass quietly out of existence, leaving the Association of Licensed Automobile Manufacturers in full command of the situation.

The general meeting of the A. L. A. M. board of managers last Thursday was



ALFRED REEVES, MANAGER A. L. A. M.

featured, of course, by the election of Mr. Reeves, but there were other interesting developments, not the least important of which was the action which empowers the executive committee to institute such suits against motor car manufacturers who are infringers of the Selden patent as the A. L. A. M. lawyers may advise. The report made at this meeting shows that there are now sixty-two makes of gasoline cars licensed under the Selden patent, more than one-third of these having been so licensed since the decision of Judge Hough. Two concerns recently admitted are Dorris and Mack Brothers.

As for the show which closed last night, Colonel George Pope, chairman of the A. L. A. M. show committee, told the meeting that all records had been broken in that the daily attendance showed an increase of 30 per cent over former years. Colonel Pope also was confident that the garden



would stand at least another year and unfolded some of his plans for housing the big A. L. A. M. membership in the garden in 1911. The meeting of the A. L. A. M. was one of the best attended ever held, there being thirty-nine concerns represented as follows:

James Joyce, American Locomotive Co.; George H. Strout, Apperson Brothers Automobile Co.; John S. Clarke, D. S. Ludlum, Autocar Co.; A. Y. Bartholomew, Bartholomew Co.; Frank Briscoe, Brush Runabout Co.; W. C. Durant, Buick Motor Co.; W. C. Leland, Cadillac Motor Car Co.; Hugh Chalmers, Chalmers-Detroit Motor Co.; Herbert Lloyd, H. W. Nuckols, Columbia Motor Car Co.; M. S. Hart, Corbin Motor Vehicle Corporation; William R. Innis, Everitt-Metzger-Flanders Co.; G. H. Stillwell, H. H. Franklin Mfg. Co.; Elwood Haynes, Haynes Automobile Co.; E. R. Hewitt, William E. Metzger, Hewitt Motor Co.; R. D. Chapin, Hudson Motor Car Co.; G. A. Matthews, Charles Lewis, Jackson Automobile Co.; A. N. Mayo, Knox Automobile Co.; S. T. Davis, Jr., A. W. Robinson, Locomobile Co. of America; H. A. Lozier, Lozier Motor Co.; F. F. Matheson, Matheson Motor Car Co.; Benjamin Briscoe, Maxwell-Briscoe Motor Co.; William T. White, Mercer Automobile Co.; Henry Plow, Mitchell Motor Car Co.; W. H. Van Dervoort, Moline Automobile Co.; C. C. Hanch, Nordyke & Marmon Co.; H. B. Joy, Packard Motor Car Co.; L. H. Kittredge, Peerless Motor Car Co.; Charles Clifton, Pierce-Arrow Motor Car Co.; George Pope, A. L. Pope, Pope Mfg. Co.; H. O. Smith, Premier Motor Mfg. Co.; R. E. Olds, Reo Motor Car Co.; George J. Dunham, Royal Tourist Car Co.; G. E. Mitchell, Alden Sampson, R. H. Salmons, George B. Selden, Selden Motor Vehicle Co.; F. B. Stearns, F. B. Stearns Co.; William R. Innis, Studebaker Automobile Co.; E. R. Thomas, E. R. Thomas Motor Co.; Windsor T. White, Waltham Mfg. Co.; Thomas Henderson, Winton Motor Carriage Co.; T. C. O'Connor, York Motor Car Co.

Reeves Resigns A. M. C. M. A. Job

At the committee of management meeting of the American Motor Car Manufacturers' Association, held at the New York headquarters Wednesday, R. E. Olds, chairman of the show committee, rendered his report of the Grand Central palace show, indicating that the affair exceeded in attendance, in the amount of business done, and in profits, any previous motor car exhibition held anywhere. A dividend of 72 per cent on the amount paid for space was declared to the Importers' Automobile Salon and the Motor and Accessory Manufacturers.

A letter was approved to be sent to every member of the association relative to the annual meeting to be held in Chicago



THERMOID TABLET PRESENTED TO THE LOZIER COMPANY



on February 9, for action on the association's agreement which expires by limitation on that date. The clause in the agreement reads as follows: "The term of this agreement is for 5 years, but any party hereto shall be considered as withdrawn from the terms thereof, who fails to pay the sum or sums hereinafter mentioned within 30 days of demand therefor by the committee heretofore created."

Upon motion, duly seconded, the resignation of Alfred Reeves as general manager was accepted with regrets.

Also having a bearing on the Selden situation is the fact that the New York dealers are preparing to organize a body to be known as the Licensed Automobile Dealers of New York, a meeting having been called for next Thursday afternoon at the Hotel Astor. More than fifty licensed dealers have been invited to attend the meeting and it is understood that the formation of this new body is the forerunner of similar associations to be formed in all the big cities of the country. New York, however, is not the pioneer in this line, there having been a segregation of dealers in Los Angeles, Cal., through the formation of an association, formed for the purposes of promoting competitions, in which only agents handling licensed goods are eligible. **Rules Committee Appointed**

The first meeting of the active rules committee of the Manufacturers' Contest Association will be held in Chicago during the N. A. A. M. show week when Chairman Howard E. Coffin will call together the committee of six which has in charge the drafting of rules. Chairman Coffin has named as his associates on his committee George Weidley, A. L. Riker, A. P. Brush, Edgar Apperson and Paul Lacroix. The general rules committee of the Manufacturers' Contest Association from which its active rules committee has been chosen, consists of the following: George Dunham, Chalmers-Detroit Motor Co.; Edgar Apperson, Apperson Brothers Automobile Co.; Alanson P. Brush, Buick Motor Co.; H. E. Coffin, Hudson Motor Car Co.; C. G. Stoddard, Dayton Motor Car Co.; E. Rand Hollander, Fiat Automobile Co.; Howard Marmon, Nordyke & Marmon Co.; F. R. Bump, H. H. Franklin Mfg. Co.; F. B. Holmes, Jackson Automobile Co.; Herbert G. Farr, Knox Automobile Co.; A. L. Riker, Locomobile Co. of America; H. A. Leder, Lozier Motor Co.; C. W. Kelsey, Maxwell-Briscoe Motor Co.; G. V. Rogers, Mitchell Motor Car Co.; George M. Dickson, National Motor Vehicle Co.; J. Elmer Pratt, Pierce-Arrow Motor Car Co.; Paul Lacroix, Renault Freres Selling Branch; F. B. Stearns, F. B. Stearns Co.; E. J. Thomas, E. R. Thomas Motor Co., and Walter C. White, White Co.

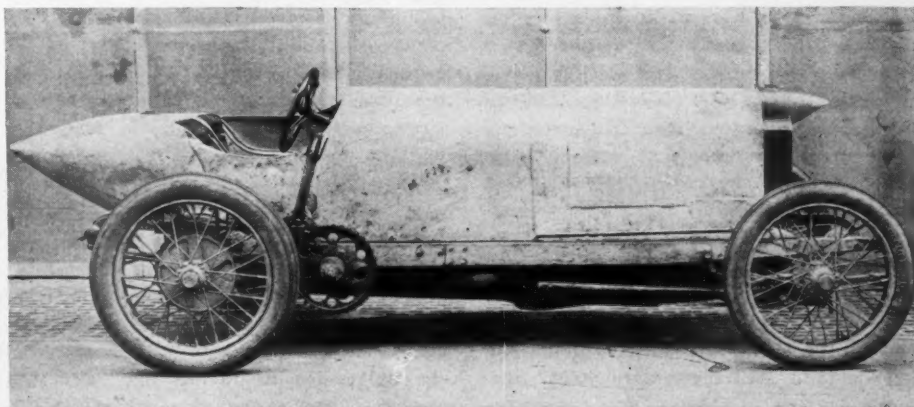
Definite announcement of the plans and

Tenth Selden Show Now History



C. F. CLARKSON, ASSISTANT MANAGER A. L. A. M.

details of the new Los Angeles board track motordrome were made during the show by F. E. Moskovics, president of the enterprise. The track will be 1 mile in circumference, a true circle in shape, the turns therefore having an enormous radius—much greater even than the Brooklands track in England. The Los Angeles motordrome will be 75 feet wide and uniformly banked to a gradient of 3 in 1; and 25 feet high on the outer edge. Ralph de Palma, George Robertson and Lewis Strang have entered cars for the opening meet. Moskovics received the entries of the entire National and Marmon teams, and it is very probable that the Buick string will be there in full strength. The inaugural of the board saucer is sent for next April. The handicapping will be in charge of A. L. McMurtry, chairman of the A. A. A. technical committee. Arrangements have been made with C. H. Warner to take charge of the timing.



HEMERY'S BROOKLANDS BENZ, JUST ARRIVED IN NEW YORK

Record-Breaking Attendance at Garden Exposition—Gossip About Future of the Building

NEW YORK, Jan. 16—Without any great flourish of trumpets and with the band playing the usual "Home, Sweet Home" the tenth annual show of the Association of Licensed Automobile Manufacturers passed into history last night. The first outburst from the band was followed by the customary rush on the part of the exhibitors to pack up their belongings and be on their way. No one had been allowed to do any packing prior to 10:30, and so it was a fair field with no favor when taps was sounded. The scene attendant upon the dissolution of the show were the same as in previous years—the same hustling army of huskies, the jostling of cars in the narrow aisles and the rush to get out of the building. But by midnight many of the exhibits had been moved and the others were in such shape that it was comparatively easy to get them out this morning.

To say that the tenth show was the greatest of them all is not any exaggeration. The Selden week undoubtedly attracted the largest attendance that the garden ever held in 7 consecutive days of motor exhibitions. Business was brisk at all times and as was the case after the conclusion of the palace show not a complaint was received from any of the exhibitors, all being well satisfied with their treatment at the hands of the A. L. A. M. show committee.

The chances are this will be one of the last motor car shows to be given in Madison Square garden because of rumors that the famous old structure is to be torn down have grown more and more insistent and now there is a touch of truth to them that makes it look as if the gossips had hit it right this time. The latest is that the garden is to be torn down and give way to a skyscraper that will overshadow the Metropolitan Life building, which has the tallest tower in New York. It is declared that the Equitable Life Assurance Society is back of the project and this of

Motor Industry and the Railroads

NEW YORK, Jan. 17—That many American railroads have had an immense business from the motor industry, both through the shipment of machines from the factories and by the stimulus given allied industries, was developed in an interview with J. S. Marvin, general traffic manager for the three manufacturing organizations, the N. A. A. M., A. L. A. M. and A. M. C. M. A., who is preparing for the migration to other shows. Mr. Marvin, in discussing this, said:

"The carriers have shared liberally from the development of the industry in this country. They naturally profit through the success and extensive shipments of any industry, but this one is exceptionally productive of revenue for the railroads. A motor car factory will pay the carriers for from five to ten times as many freight cars, and at much higher rates, than a factory producing an equal number of horse-drawn vehicles. It is expected that something like 100,000 carloads will leave the factories this season. These shipments, of course, originate over a scattered territory and move to all parts of the country; but if New York to Chicago could be considered the average distance hauled, it would indicate that the carriers will earn on them about \$8,000,000. Taking Detroit to New York as the average distance, the carriers would earn about \$6,000,000. The factories that produce in large quantities give the carriers each day for a considerable portion of the year enough loaded

cars to make up a good-sized freight train. In addition to the machines shipped direct from the factories, the railroads carry thousands of shipments to and from races and exhibitions, second-hand machines sold, and shipments made by owners and tourists.

"Seventy-five to 100 carloads leave New York at the close of the shows. The exhibitions at Chicago, Philadelphia, Boston, Atlanta and other cities create similar traffic. Thousands of tons of coal, material and supplies are hauled monthly to the factories by the railroads, and hundreds of other factories engaged in the manufacture of parts and sundries are supported, all producers for the carriers. The express companies have done an immense business with the motor factories, amounting in revenue to about \$1,000,000 per year, a large part of which is on factory supplies and sundries. Hundreds of thousands of travelers use the passenger service annually through their interest in exhibitions, races, etc., inaugurated by this industry.

"The total amount of money invested and kept in circulation is enormous, and has created business for the carriers in every department of their service. Statistics show that about one-half of those who entered the manufacturing field have discontinued. To those who persevered the railroads are indebted for an immense addition to their high-class business within the past 10 years."

course means J. Pierpont Morgan. It is well known that Morgan controls the Equitable and also has a lot to say in garden affairs and it also is said that the garden has just about reached top-notch in realty circles, being appraised at \$2,245,000. It was figured that by selling the present Equitable building on Broadway which is worth \$15,000,000 that the Assurance company could put up a \$6,000,000 skyscraper on the garden site and thus clear up many millions. But it is said that Morgan has another deal on which provides for the construction of an immense outdoor stadium at Hackensack where it will be possible to put on the motor car shows and draw just as large crowds as in the past. None of these stories has as yet been confirmed, but it is almost certain that the garden will go. However, the A. L. A. M. is assured it can have the garden next year. As for the Grand Central palace, the owners say that it will not be torn down for at least 2 years.

Statistics of the Shows

Looking back over the week one discovers that while the body feature undoubtedly was the introduction of the new torpedo type, still there were many other features that are worthy of comment. There were shown in the garden 193 cars,

not counting the commercial machines, as against 348 at the palace, exclusive of the business vehicles. In the garden the price division shows there were thirteen cars selling under \$1,500, thirteen between \$1,500 and \$2,000, eighteen between \$2,000 and \$3,000, nineteen between \$3,000 and \$4,000, thirty-one between \$4,000 and \$5,000, nineteen between \$5,000 and \$6,000 and eleven selling for \$6,000 or over. There were twelve manufacturers of commercial exhibiting the lines ranging from light-powered delivery wagons to the heavy 5-ton trucks. Two of these were electrics and the other ten gasoline, while all but two of the twelve exhibitors also displayed pleasure vehicles in the other part of the garden. There were 243 exhibitors of accessories, taking in everything such as tires, batteries, coils, timers, magnetos, bodies, tops, oils and others.

According to an official count of tires made by E. L. Ferguson, what is known as the quick-detachable led all others. The rims were divided into four kinds—the quick-detachable, the pioneer of them all, the clincher, the demountable, in the regular clincher rim, brought forth more from the exigencies of racing than anything else, and finally the detachable-demountable.

At each show the quick-detachable was in the lead and the clincher second, it being a peculiar commentary that the use by the foreign cars at the palace show of clincher tires was so general that it had a material effect on any percentage table that might be worked out.

Of the 348 cars at the palace, exclusive of commercial vehicles, 139, or 56 per cent had quick-detachable rims; ninety cars, or 36 per cent had clincher rims; fourteen cars, or 6 per cent, had detachable-demountable, and five cars, or 2 per cent, had demountables.

Between the 190 American and the fifty-eight foreign cars the respective divisions were: 136, or 71 per cent; forty, or 21 per cent; eleven, or 6 per cent, and three, or 2 per cent, for the American, and for the foreign the rims numbered fifty, three, three and two, equaling the percentage of 86, 5, 5 and 4.

The garden show, exclusive of trucks, had 193 cars, divided into 140 detachable, thirty clincher, thirteen demountable and ten detachable-demountable. This count includes the electrics, except the six that had solid tires. The percentage column figures out 73, 15, 7 and 5 in the order named.

Also it was noticeable that the A. L. A. M. designers seem well satisfied with the standard size of wheels. There were only three cars on view fitted with 42-inch wheels and these three were all of the same make. There were a few 38 by 36-inch wheels and the average size seems to be 34.

Considerable interest was displayed in the exhibition made of motoring trophies. In all there were 118 cups and shields on view in the basement and the Chalmers-Detroit company derived considerable satisfaction from the fact that forty-nine of the 118 had been won by Chalmers-Detroit cars. Among many beautiful trophies was a newcomer which made its bow at the show, the Thermoid shield which was presented to the Lozier company by the Thermoid Rubber Co. in recognition of the work of the Lozier cars in 24-hour races. The Thermoid company made this presentation at a dinner given at the Hotel Royaltan on New Year's eve, the tablet being received by Vice-President Chandler, of the Lozier company. The tablet was designed by Peter Korzilius. It measures 3 feet in height and 5 feet in length and shows the two Lozier cars breaking the 24-hour track record at Brighton Beach.

Dinner Parties of the Week

Dinner parties continued to be popular during the week, two of these functions being the annual dinner of the Class Journal Co. and the banquet given to its dealers by the Packard Motor Car Co. The Class Journal Co. spread took place last Wednesday noon at Hotel Flanders with President H. M. Swetland at the head of the table. With one or two exceptions the full quota of officers and employees was present. The work of the year was summed up and the avenues of operation for the

coming year were outlined. The Packard dinner took place Wednesday night at the Hotel Astor.

It was the fourth annual dinner and was given in the small ball room. It was informal in character, story-telling taking the place of the usual set speeches.

TERRY'S BOARD MEETS

New York, Jan. 17—Eleven state associations of the American Automobile Association were represented in the session of its national legislative board last week, and presided over by Chairman Charles Thaddeus Terry. Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Delaware, Ohio, Colorado and Nebraska were the states that supplied delegates, and a thorough discussion of the general legislative situation occupied several hours. Much time was devoted to the federal registration bill and the national legislative convention which will take place at Washington, D. C., February 15, 16, 17. The sole point sought to be effected by the federal registration bill, as outlined by Chairman Terry, is to afford a motor vehicle user, after he shall have obtained his license to operate from the state of his residence, to procure from the federal bureau in Washington a federal license which will enable him to operate without the necessity of procuring any further license, or of paying any further fees, wherever he may choose to take his car. The bill does not in any effect interfere with states rights to regulate motor cars in all other respects, as to speed, signal devices, brakes and the like, and it leaves every state free to regulate the use of motor vehicles within its borders as it may choose in all these respects. There was a thorough discussion of the question of the special taxation of motor cars, whether under the name of registration fees or license fees. It was the sense of the meeting that on principle there was no justification for charging motorists for the use of their cars, anything more than such sum as should be sufficient to cover the cost of registration and the issuance of identification marks.

PROBABLE RACING DATES

New York, Jan. 17—The new contest board of the American Automobile Association is bending every effort toward the rounding out of the projected racing circuit for 1910, and it will be its endeavor to make a schedule of meets and contests in such a way as to avoid long jumps for racing teams. The middle west and south doubtless will figure prominently in the schedule. Both Atlanta and Indianapolis have speedway promoters with ambitious plans for the year. The southern motor-drome managers figure on two or three sets of dates, while it is said that Savannah plans some sort of a successor to the grand prize race of Thanksgiving Day, 1908. Indianapolis, according to report, has applied

Mitchell and Lewis Interests Merge

RACINE, Wis., Jan. 17—An amalgamation of the extensive Mitchell and Lewis interests, including the Mitchell Motor Car Co., to form a \$10,000,000 corporation known as the Mitchell-Lewis Motor Co., has just been effected. It is one of the greatest commercial deals in Wisconsin history and is of wide import. Every interest of the Mitchell and Lewis families in Racine and elsewhere, including properties in Racine, Minneapolis, Portland, Chicago, New York and Paris, is merged. This includes the Mitchell & Lewis Wagon Co., out of which sprung the Mitchell Motor Car Co., which long has been prominent in the motor car industry.

Captain William Mitchell Lewis, president and general manager of the motor car company, becomes active head of the entire interests, and his father, W. T. Lewis, becomes chairman of the board of directors. The company has no bonds or other floating indebtedness. The amalgamation means that the motor car department will be greatly enlarged and made ready for the production of motor trucks, the big

wagon works being convenient in all respects for this purpose.

The combined plants represent at this time 59 acres, and the holdings include 30 acres now vacant. As soon as weather permits ground will be broken for new buildings to cost \$500,000, and including a one-story factory, concrete and steel, 162 by 250 feet, and a four-story factory, 150 by 400 feet. This will provide foundry, drop forge plant, spring factory and body works, the Mitchell hereafter being manufactured entirely under one roof. The Mitchell line will be manufactured in the Racine Junction plant and the trucks, light deliveries and ordinary wagons in the Washington avenue works. In 12 months the force will reach 5,000 men. The combined works will produce 7,500 cars for 1910.

The Mitchell Motor Car Co. was founded by William Mitchell Lewis in 1904 with a capitalization of \$150,000. Recently the capital was increased to \$2,000,000. The capitalization of the combined companies is \$10,000,000. The great undertaking was engineered by Mr. Lewis.

for dates that will include Memorial Day, July 4 and Labor Day. In the east it is said that Brighton Beach will be the scene of four 24-hour races, while the Vanderbilt cup contest has been timed to take place about the beginning of October, or 4 weeks earlier than usual.

EXPORTS AND IMPORTS

Washington, D. C., Jan. 17—The big gains in the American export trade in motor cars and parts in the last few months are clearly shown in the latest statistics compiled by the government. The number of cars shipped abroad in November last was 464, valued at \$464,567, together with parts valued at \$99,389, while in November, 1908, the number of cars was only eighty-seven, and their value \$145,070. The value of the parts exported that month was \$42,850. The increase was maintained during the 11 months' period ending November, the figures showing that 2,005 cars, valued at \$4,116,476, were exported in 1908, increasing to 3,228 cars, valued at \$6,385,600, in 1909. During these periods the value of the parts exported increased from \$567,947 to \$800,982.

Cars and parts were shipped to the following countries during November last: United Kingdom, \$63,992; France, \$28,036; Germany, \$14,121; Italy, \$9,140; other European countries, \$9,597; British North America, \$141,647; Mexico, \$75,084; West Indies and Bermuda, \$58,787; South America, \$52,965; British East Indies, \$884; British Australasia, \$54,700; other Asia and Oceania, \$33,990; Africa, \$2,877; other countries, \$18,136.

The import tables show that the number of cars received in this country increased

from eighty-six, valued at \$212,246, in November, 1908, to 144 cars, valued at \$269,186, in November last. During these periods the imports of parts dropped in value from \$74,983 to \$62,240. During the 11 months' period the imports of cars increased from 1,221, valued at \$2,343,646, in 1908, to 1,496, valued at \$2,778,457, in 1909, while the imports of parts likewise increased from \$580,801 to \$802,695.

During November last cars were imported from the following countries: United Kingdom, 7, valued at \$18,316; France, 82, valued at \$157,450; Germany, 19, valued at \$32,606; Italy, 29, valued at \$45,584; other countries, 7, valued at \$15,230.

PLANT FOR WABASH

Wabash, Ind., Jan. 15—The contract of the Standard Automobile Co. of America, which is to locate in Wabash, provisionally, has been signed by the representatives of the company. The capital stock has been made just \$500,000, which is twice what was first promised. The articles of incorporation have been drawn up for the company, ready to be filed with the secretary of state and with the county recorder as soon as Wabash makes good its provisions, the articles being drawn up by N. G. Hunter, by agreement. Wabash still has to sell about twenty lots at \$350 each to raise the bonus of \$42,500 required for landing this plant. The Wabash Bridge and Iron Works building will not be sufficiently large and within a short time the building will be used only for forge or blacksmith purposes, the main building being much larger. The company will commence work within a few weeks and in about a year expects to employ 500 men.



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Factories Must Tune Cars

ONCE more come reports from various buyers of cars as to the lack of completeness in them when delivered, this consisting either in failure to have the car tuned up in the ordinary sense of the term, or leaving many little parts in a non-perfected condition. Nineteen hundred and nine was practically a commercial year, the manufacturers straining every effort to make as rapid deliveries as possible in order to keep somewhere apace with demands. This ultra-demand condition is no reason whatever why manufacturers should neglect giving their many cars the necessary attention before delivery. Some buyers have reported that as much as 2 or 3 weeks have elapsed before they have got their new models in good running condition. This is not right. There is no reason why makers should not deliver their cars so that they will run well from the start. The loss in this connection is not all borne by the buyer, but a goodly portion of it falls on the agent in the town or city where the sale is made. It is up to the agent to put the car in a satisfactory running condition, and whatever is not done at the factory it is up to the agent to do. The factory does not allow the agent any special commission on this final testing of a car, and where an agency makes a great many sales and each car has to be put through the final testing, which should have taken place at the factory, the expense of such an agency is considerable during the season. It is to be hoped that manufacturers will cease this shortsighted policy, and assemble their cars and tune them to the desired selling pitch before delivering them to buyers.



THE recent New York shows have proven fairly conclusively that car manufacturers are year by year recognizing the status of the parts makers, so that for 1910 the old-time car builders have used more outside parts in their cars than heretofore. A few examples will suffice to show this situation. In the carburetor field it was noted that at both the Grand Central palace and Madison Square garden shows that six motor car makers who have heretofore fitted their own carburetors have dropped them for 1910 and are fitting carburetors made by concerns which devote all their time to carburetor manufacture. This is but one more example of the old adage "Every man should be heard in his own department." It is natural to conclude that a concern devoting all of its time from January 1 to December 31 to the manufacture of carburetors and the necessary research work connected with it should know more about carburetors than a car manufacturer whose engineering force devotes the majority of its time to motor and chassis design and but a small portion to the subject of carburation. What is true in the carburetor field is also true in other fields of accessories. Three years ago many of the old-time makers built their own radiators, giving as their reason the fact that it was a real radiator and not, as they expressed it, a cheap stock-made product. Today this is altered, and the best car builders realize that the manufacturers of radiators are in much better condition to do this work than are they themselves. The general adoption of certain manufactured parts in the highest priced cars is a recognition of progress in parts manufacture, as it means that these car makers have examined the parts, and find that they are up to their own standard of efficiency and construction. It also means that car manufacturers can buy many of these parts cheaper than they can manufacture them themselves.

All-The-Year-Round Cars

BY a careful examination of the many exhibits at a motor car exhibition it is possible to fairly accurately trace out certain tendencies of the industry, and in the recent New York shows nothing in this regard was more conspicuous than a half-dozen trends, all of which pointed towards the all-the-year-round use of motor cars. Heretofore the high-priced car has been utilized in the winter in cities, but the cheap car has not received as much attention in this respect. One of the situations which suggested the all-the-year-round car was the immense display of anti-skid tires and anti-skid chains and other devices for use on tires. Practically every tire manufacturer has now some form or other of anti-skid tread. Some use the round rubber knob, some the square shape, some the diamond shape, some the oblong, some irregular shapes, and others use conventional forms but arrange them diagonally or otherwise, irrespective of the particulars of design of these anti-skids; but the one fact remains that they have all been brought out for use in inclement weather, either during the rainy season of the fall, the snows of winter, or the muddy periods that may come with any particular season.



NOT only do the anti-skid tires show this, but the vast array of tire chains, tire coverings and mud hooks of one nature or another which are now on the market. It is safe to say that in the last year the number of concerns manufacturing such devices has doubled, and it would not be surprising to see a considerable increase within the next year. It is also a healthy indication to note that there is a wonderful similarity existing among many of these anti-skid devices, a fact which proves that good efficiency has been obtained. To these two tire situations might be added the other two trends which are indicative of the all-the-year-round car. The first is the greater number of closed body types shown, the landaulet and limousine being leaders in this respect. Another is the double body situation which prevails in many factories, in which when a chassis is sold a summer body as well as a winter body is included in the sale. The inclosed body on the cheap car is also coming to the front, so that in a year or so it will be possible for the man with a \$1,500 car to use it with comfort 12 months in the year.



SPECULATION is already rife in all parts of the country as to the exact status of contests for 1910, and until the various announcements governing such are made by the contest board this speculation will continue. It has been rumored in several quarters, however, that the contest situation will be more definitely arranged during the coming season by means of a calendar which will be announced at an early date, and on which practically all the events for the coming season will be given. If it is possible to announce by the middle of March practically all of the contests for 1910, this will prove of inestimable value to the manufacturers, in that they will be able to look over the complete program of the year and pick out those contests which they purpose entering their machines in. Without the announcement of a calendar covering the entire season, such a condition of affairs would be impossible, the manufacturer would be compelled to enter contests in July without any knowledge of what contests would be promoted in August, September or October. With the entire calendar announced it will not be possible for a manufacturer to make complete selection of dates.

First of the Kansas City Shows

KANSAS CITY, Mo., Jan. 17—The first Kansas City's two shows, the one promoted by the Motor Car Trade Association, opened this evening in Convention hall, there being forty makers of gasoline cars, nine electrics, nine commercial trucks, and four accessory concerns represented. In all there are almost 200 cars on view, and it is predicted that the affair will be a big success. The scheme of decoration is chiefly floral, but is incidentally designed to portray the spirit of the west. A great number of panels, some being reproductions of work by the late Frederick Remington, screen off the eastern, western and southern balconies from the arena. In keeping with the floral idea, a rustic hedge runs down the center of the arena, separating exhibits. Exhibits are marked this year by a uniform system of lamp posts—something after the fashion of the marking of exhibits at the Madison Square garden show. The newest feature of the decoration is a double-decked Japanese tea garden in the north end of the hall. The garden is laden with posies and electric bulbs and is a most attractive incidental of the show. The rathskeller and Dutch cafe for the men are in the big north rooms of the hall.

Beyond the designation of Thursday night and the preparation for the commercial truck contest on Thursday afternoon nothing has been done in the way of specials for the week. The truck contest is to be a 5-hour, non-motor-stop affair and eight big trucks already are entered. The route of the competition will be a sort of merry-go-round over the streets principally used by trucks. Penalizations are to be made for breakages, engine stoppages and time delinquencies.

The cars on view are as follows:

GASOLINE CARS

Apperson	Moon
Badger	Mora
Buick	Oakland
Cadillac	Ohio
Chalmers-Detroit	Oldsmobile
Cino	Packard
Corbin	Parry
Courier	Paterson
Columbus-Firestone	Peerless
Crawford	Pierce
E-M-F	Regal
Fiat	Reo
Ford	Royal Tourist
Flanders	Staver
Hudson	Stevens-Duryea
Hupmobile	Stoddard-Dayton
Inter-State	Studebaker-Garford
Marmon	Thomas
Maxwell	Velle
Mitchell	Welch

ELECTRICS

Babcock	Rauch & Lang
Brod	Studebaker
Columbus	Waverly
Detroit	Woods
Fritchle	

COMMERCIAL TRUCKS

Avery	Rapid
Chase	Reliance
Frayer-Miller	Studebaker
Packard	Willcox
Gramm-Logan	

The Motor Car Trade Association is made up of the following:

Buick Motor Co., Greenleaf Motor Co., Midland Motor Co., Fletcher Cowherd, Jr., Automobile Co., McGee-Huckel Motor Co., Maxwell-Briscoe Motor Car Co., Ford Motor Co., Kaw

Valley Automobile Co., Olds-Oakland Co., C. L. Taylor Motor Co., E. P. Moriarity & Co., Dey-Embry Motor Co., Nolan-Rieko Motor Co., Studebaker Automobile Co., Velle Motor Co., Hathaway Electric Car Co.

The officers of the Motor Car Trade Association are as follows: H. E. Rooklidge, president; J. Frank Witwer, vice-president; C. L. Taylor, secretary, and E. P. Moriarity, treasurer. In the direction of the show is this committee: W. S. Hathaway, chairman; R. H. Collins, E. P. Moriarity, C. C. Meade, Fletcher Cowherd, Jr., W. M. McGee and J. Frank Witwer.

OMAHA WILL SHOW MANY CARS

Omaha, Neb., Jan. 17—Thirty-one dealers will make exhibits on the main floor of the Auditorium at the Omaha show the last week in February. Each one of these dealers will exhibit from three to eight cars, so that there will be a total of about 200 different machines shown. On this floor only the pleasure vehicles will be displayed. There will be ten different exhibits of commercial cars in the basement. Dealers in accessories also will exhibit on the first floor. The total value of exhibits will aggregate about \$500,000. The Auditorium was platted out last week and drawings for space were made by the dealers. Nine new firms were admitted into the show as association last week.

MILWAUKEE HAS GOOD LIST

Milwaukee, Wis., Jan. 18—The Milwaukee Automobile Club tonight held a drawing for spaces at the second annual Milwaukee show, to be held in the new Auditorium, from February 22 to 27, inclusive. Dissension, which marked the early campaign of the club for support among the dealers, has almost disappeared, although there still are a few concerns determined to remain out of the show because they believe it more profitable to have private shows in their salerooms, taking advantage of the interest aroused and crowds attracted by the big show.

General Manager Clarke S. Drake announces the following partial lists of exhibitors:

Pleasure cars—Kisselkar, Johnson, Locomobile, Welch, Stoddard-Dayton, Chalmers-Detroit, Lozier, American, Fiat, Franklin, Speedwell, Courier, Hudson, Auburn, Halladay, Hupmobile, Brush, Jackson, Inter-State, Detroit and Baker electrics, Velle, Buick, Regal.

Commercial vehicles—Sternberg, Brodeser, Meiselbach, Packard, Abresch, Gram-Logan, Utility, International, Schacht.

Accessories, parts, etc.—Wisconsin Motor Mfg. Co., Kamlee Co., Motor Appliances Co., Garage Equipment Co., Gross Hardware Co., Goodyear Rubber Co., O'Neal Oil and Paint Co., Julius Andrae & Sons Co., Only Grease and Oil Gun Co., Cream City Trimming Co., A. J. Monday, Wold Brothers, Milwaukee Trimming Co., Wadhams

Oil Co., Wallmann Mfg. Co., King Leather Tire Co., Leo Hofmeister Co., Aquila Chemical Co., Bartels-Maguire Co., Charles Abresch Co., Northwestern Storage Battery Co., Franklin Automobile Co.

GET SPACE AT BALTIMORE

Baltimore, Md., Jan. 17—Already the thirty choicest spaces for the fourth annual motor car show to be held in this city February 22-26 and the second to be conducted under the auspices of the Automobile Club of Maryland, have been allotted. There was keen competition for the center space which was finally bought by the Dixon C. Walker Motor Car Co. Others purchasing spaces are as follows: Lambert Auto Co., Maxwell; E. L. Leinbach, Matheson; Little Joe Weisenfeld, Reo and Oakland; Motor Car Co., Stevens-Duryea; Boyd-Eastman Co., Apperson; F. W. Sandruck, Gaeth; Ford Auto Co., Ford; Palace Motor Car Co., Kline and Meteor; White Automobile Co., White steamers; Neely & Ensor, Alco; Griffin garage, Knox; Auto Outing Co., Buick, Palmer-Singer and Linge and Haynes cars; Walter Scott, Crawford; Zell Motor Car Co., Chalmers-Detroit, Peerless and Hudson; Winton Motor Carriage Co., Winton; Shaffer Motor Co., Pullman; Auto Supply Co., accessories; Baltimore Buggy Top Co.; Charles F. Houghton, Overland; Standard Motor Co., Oldsmobile and Cadillac; Mardel Mobile Co., Franklin and Packard; J. G. B. Davy & Co., accessories; General Auto Co., Parry; Foss-Hughes Co., Pierce; Mount Vernon Motor Car Co., Autocar; M. Denton, Bowser tanks; Standard Oil Co.; Viola Oil Co.

GRAND RAPIDS' DATE

Grand Rapids, Mich., Jan. 17—Grand Rapids will have a show from February 17 to 19 inclusive. Beyond the date and the fact that the display will be held in the mammoth Furniture Exposition building, the plans are incomplete. The show is being promoted by Arthur H. Vandenberg, business manager of the Grand Rapids Herald.

PREPARE FOR NEW ORLEANS MEET

New Orleans, La., Jan. 15—Visitors to New Orleans' Mardi Gras festivities will see a great meet next month if the promises of the promoters are fulfilled. De Palma, driving the Fiat Cyclone, is expected. So is Barney Oldfield. The John Deere Co. promises three cars. Governor J. Y. Sanders has offered a cup for the Louisiana championship; the New Orleans Railway and Light Co. for the southern championship; Mayor Martin Behrman,

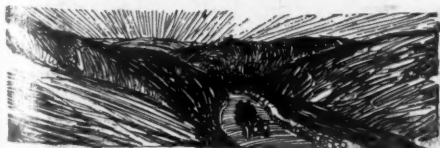


of New Orleans, for the city championship. R. de Montluzin, one of the dealers here, has offered another trophy for the New Orleans championship, competition open to New Orleans stock cars, with any local driver. Then there is to be a 25-mile hotel sweepstakes, for which a purse of \$250 has been offered by the five leading hotels of the city. The Progressive Union has hung up a similar purse for the New Orleans motor derby. The Abbott Auto Co., the Crescent City Auto Co., A. M. Cooke, of the Automobile Co., the John Deere Plow Co., the Gentilly Auto Co. and the Joseph Schwartz Co. have given \$25 apiece for another sweepstakes race. The McCane trophy is offered for a 10-mile race, open to amateurs, chauffeurs and mechanics. This trophy, with many of the others offered for the 3-day meet, February 5, 6 and 7, is being exhibited in a Canal street window.

Burman, Louis Chevrolet, Arthur Chevrolet, Joe Grennon and Joe Nelson will bring six Buick cars to New Orleans for the Mardi Gras meet. With Barney Oldfield, Ben Kirscher, one Cole factory driver and two Jackson factory drivers, in addition to George Robertson in a Simplex and Ralph de Palma in the Fiat Cyclone, this entry list is already a record-breaker. Other entries are expected from New York while the National and Marmon companies are expected to furnish one driver each, probably Aitken and Harroun.

SANTA MONICA RACE PLANS

Los Angeles, Cal., Jan. 15—The Licensed Dealers' Association of Los Angeles will handle the annual Santa Monica road racing carnival this year instead of the disorganized Automobile Dealers' Association of Southern California. Already the new organization is at work on its plans and it announces that the fast course, on which the American stock-car record was established last year by the Apperson, will be greatly improved. True, not much road work is required, Nevada avenue being about the only stretch that is not fit for racing at the present time. The start and finish will be on Ocean avenue facing the ocean, while the Ocean avenue and Nevada avenue turn will be banked so it will be possible to take it at a speed of 45 miles per hour. The turn from the Palisades into Ocean avenue also will be banked, while the Soldiers' Home turn has been improved. Among the entries already promised are the Stearns, Apperson, Locomobile, Lozier, Thomas, Columbia, Pope-Hartford, Franklin and Studebaker. The new association has started a campaign for entries that will produce results.



Forest Scheme for Chicago Show

CHICAGO, Jan. 17—Having been given the right of way because of the windup of the New York shows, the Miles administration is working tooth and nail for the Coliseum affair, which has been set for February 5-12. Imbued with the forest idea of decorations Miles is determined to go the limit, even striving for the real woodland atmosphere. Arrangements have been made to give a timberland odor to the Coliseum, and incense, such as was used in a Hudson bay production by Robert Edeson a few years ago to give the audience a breath of the pine country, is to be adopted. The Coliseum annex, which is to be fitted out as a rose garden from basement to second floor, is to be scented with rosewater, while a rustic atmosphere will be provided for the First Regiment armory, where the decorations are to be different from those in both the Coliseum and annex.

The plans for the Coliseum call for four center sections. On the dividing line running north and south, there is to be, near the center of each section, a running fountain; to the north and south a tree; on each side of the tree, a brick pillar surmounted by vases, each pillar bearing two lamps. In the space between the pillar and the end gallery there is to be a gate supported by two brick pillars surmounted by vases. At the end of each section nearest the gallery will be found a tree evidently in full growth, and at the other end a circular picket fence mounted on a brick base. The spaces between these sections will be occupied by iron fencing 9 feet in height, with a circular fence surrounding each tree.

The end line of each section running east and west will be mounted by a brick wall surmounted by an iron fence and ending in a brick base. The spaces will be divided by an iron railing running east and west and ending in a circular picket pillar. Midway between these pillars running north and south, the aisle line will be marked by rows of box, bay or other trees. Each of the circular pillars will carry a vase. All vases will be filled with flowers and foliage. All of the fencing will be vine covered.

Eight trees 60 feet high, 50 feet spread and 2 feet trunk and four trees 20 feet high, 10 feet spread and 1-foot trunk are to be installed in front and extending under the gallery. These trees are to be carted to the Coliseum from Wilmette a few days prior to the opening of the show. The branches are to be tied down and if any of them interfere with the tree being carried into the building they will be carefully sawed off, marked and spiked on when placed in the interior.

Other equipment to be required for the Coliseum include sixteen sets of foliage for 20 by 20-inch vases on pillars, eight sets

of foliage for 20 by 20-inch vases on gate posts, sixteen sets of foliage for 14½ inch vases on brick bases at the corners, four sets of foliage for vases 20 by 20 inches on brick bases at ends of sections in the center aisle, sixteen sets of foliage for 14½-inch vases on dividing lines, twenty-two bay trees between dividing line posts on aisle front, 2,500 square feet of foliage for 9-foot fence and tree circles, and four sets of foliage for fountains.

The staff work to be used will include besides the vases, brick pillars, gate posts, bases and caps, 370 lineal feet of brick wall 2 by 1 foot. Thousands of feet of railing are to be used. Each of the four gates is to be 8 feet wide, 9 feet high, extending to 12 feet in the center.

The forest effect is to be carried out in the gallery. Bay trees are to be utilized in large numbers and sixteen keystones will be required. A veranda with a railing to the front will extend around the entire balcony. The walls are to be entirely hidden behind scenery. The band stand is to be a pagoda. Large quantities of foliage are to be used and will be intertwined in wires which will be attached to trellis posts.

The Coliseum annex, which is to describe a rose garden, will be fitted up with thousands of feet of trellis posts and wire on which foliage is to be suspended. On the first floor 15,900 square feet of trellis will be used for panels around walls and ceiling. Vases will also be used in abundance, and there will be many bay trees. Railings are to be used on the first floor only. No staff is to be used in the basement or on the second floor, but each stained glass window will form part of the decorative scheme on the second floor of the annex. Paintings on the walls and baskets hanging from the ceiling will also add to the artistic beauty. A rustic fence will hide the balcony on the second floor.

Pictures are also to be utilized in the basement, where trellis work and foliage and picket fences will be found.

The center of the armory is to be set with four pagodas, vases, foliage, baskets, chains and rails enhancing the effect. One hundred and sixty feet of rustic fence to match the pagodas will be 3 feet high at the corners. At the corners the rustic bases will be 3½ feet to 4 feet high, mounted with vases and foliage. The painted ceiling at the end of the second balcony calls for 17,990 square feet of scenery. From the second to the fourth balconies will be 4,400 painted windows, while a glass roofing of 4,800 square feet will be installed.

The armory walls are to be covered with foliage and trellis. In the gallery 3,000 square feet of foliage will be tacked under the second balcony. A rustic rail will extend around the entire gallery.

Prince Henry Tour Regulations

Germans Frame Up Stringent Rules to Govern Annual Test—Affair Takes Place in June

BERLIN, Jan. 8.—The Kaiserlicher Automobile Club of Berlin and the Bavarian Automobile Club of Munich have completed the rules which will govern the second annual tour for the Prince Henry trophy, which will take place in June. As announced before, the first day's run, June 2, will be from Berlin to Brunswick, and will include the first speed trial. June 3 the tourists go from Brunswick to Cassel, June 4 to Nuremburg, and on the 5th they will take a rest. The 6th they drive to Strausburg, and on the 7th, going from Strausburg to Metz, the second speed trial will take place. The final day's run will be from Metz to Homburg.

The promoting clubs have given considerable thought to the drafting of the regulations and of interest to Americans is that section of the regulations which pertains to the qualification of the competing cars. Open to the competition are four and six-cylinder cars with engines of the four-cycle type and ranging from 8 to 25 horsepower, the formula employed to figure the horsepower being as follows:

$$PS = 0.007 i \cdot d^2 \cdot \sqrt{s^2}$$

In this i = the number of cylinders, d = bore, s = stroke in centimeters. The stroke may be up to 60 millimeters larger than the bore.

Each car must be capable of carrying at least four passengers and there must be an entrance on both sides with doors and from the step to the bottom of the body must be enclosed. Other clauses call for two independently-acting brakes, of which one must act directly on the rear wheels or some parts of which are rigidly fixed to the latter; a muffler; the exhaust pipe must be taken to the rearmost portion of the car and the outlet from the muffler be so situated that the escaping gases shall not create dust. The two front lamps must be at least 100 millimeters in size and also must be carried a lamp on the rear which shall show the Prince Henry tour number. There must be a reverse gear and some safeguard in the form of a sprag for hill-climbing. The horn must be of a single deep-tone variety or if it possesses several sounds those sounds must

be simultaneous. Also each car must carry a speed indicator.

It is compulsory to carry a spare outer casing, but the carrying of inner tubes is optional. Each car must be properly painted and varnished and must have four guards of solid material of at least the width throughout of 100 millimeters. The mud guards must not be detachable and must cover at least one-fourth part of the wheel. If a perpendicular tangent of the periphery is drawn at the back tires then the back mud guards must project beyond this tangent by 50 millimeters.

Body Requirements

So carefully are these rules drawn up that minimum measurements for body work, which must be of wood or metal, are given as follows: Width of front seats, 1,140 millimeters; width of back seats, 1,200 millimeters, both measured in the height of the arm rests at the narrowest part of the outer edge of the body work; height of the front seats, 750 millimeters; height of back seats, 800 millimeters, both measured from the center of the car over the top edge of the frame and from the top edge of the back to the top edge of the chassis frame. The seat boards of the front and back seats must lie at least 270 millimeters over the top edge of the frame horizontal. The distance of the top back edge of the front seat to the top back edge of the back seat must be 1,100 millimeters as shown in the sketch. The back supports in the front seats must be at least 750 millimeters high and those of the back seat millimeters high, and must be closed throughout. The measurements of the 750 and 800 millimeters, respectively, must be uniform from the middle of the bodywork to both sides for at least 400 millimeters, as shown in the sketch. The side arm support of the front and back seats must be at least 600 millimeters high, measured from the top edge of the frame. The height of the door is not described. The deepest point of the chassis must have at least 150 millimeters' clearance from the ground.

Weight of the Cars

The prescribed total weight of the car in kilogrammes is calculated on the following formula: $G \text{ kg} = 775 + 25 (PS - 8)$, in which PS is to be fixed. The prescribed weight is to be calculated exclusive of spare casings, inner tubes, gasoline, water and oil, and with empty tool

bags and with oil in the motor bearings. In order to simplify the process, the cars can be driven with oil, water and fuel in their respective tanks to the scales and an allowance of 60 kilogrammes for each car made. The weight short of this must not be made up artificially. At no time during the trial can the weight be reduced. The fuel will be carried at the cost of the entrant by the Imperial Automobile Club and such fuel must either be gasoline of a specific gravity of 68 and upwards and benzol and all its mixtures. The entrance fee is to be 500 marks per car, which sum includes insurance against personal risks, against fire and against third party claims.

It is provided that each car must carry three passengers, including the observer. The total weight of an 8-horsepower car, including passengers and supplies, must be 350 kilogrammes, while the weight of cars of greater horsepower increases at the rate of 3 kilogrammes per horsepower. Shortage of weight must be made up by ballast.

Club Members Must Drive

The promoters provide that each car entered must be owned by a member of the German affiliated clubs or of a recognized National Automobile Club, and at the time of the first closing of entries, April 1, must be in actual use by the entrant. The competing cars must be driven by members of the organizations mentioned, who must receive no remuneration whatever. Permission is given for the driver to substitute his mechanic or any other passenger on his car to drive for a period not exceeding 2 hours daily, excepting in the case of indisposition, when the observer's permission must be obtained. During the speed trials the driver must himself take charge of the car.

Duties of Observer

Each night the observer must personally hand over the car to the official in charge of the night garage, who will keep it until 1 hour before the morning start. In this hour necessary repairs and adjustments can be made, but only the tools carried on the car can be used for this purpose. Also during this hour fuel, water and oil tanks may be filled, but tires cannot be changed without penalizations.

Repairs necessary during the tour may only be made by the driver and his mechanic, or, failing such, by a passenger who has been fixed upon before

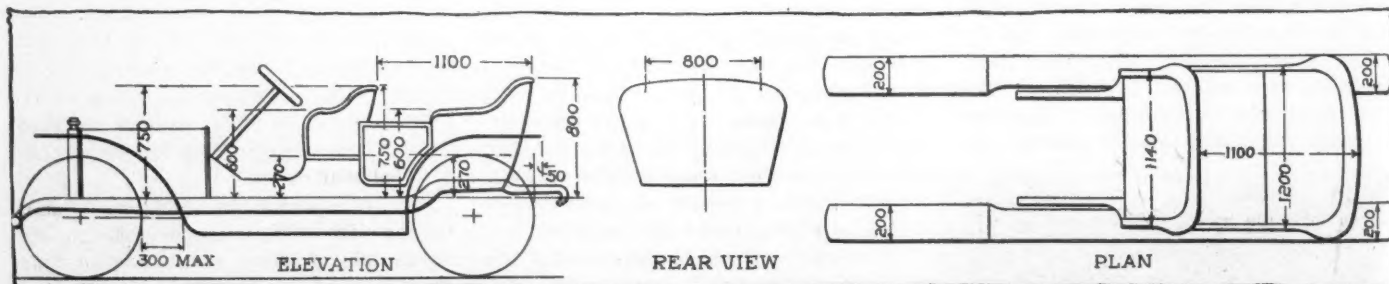


DIAGRAM SHOWING BODY REQUIREMENTS IN THE PRINCE HENRY TOUR IN GERMANY

the beginning of the trial. Repairs on a car in motion are forbidden. All repairs upon the stages can only be made with spare parts carried upon the car. Infringement of this rule entails disqualification. An exception is made in respect to tires and inner tubes. Penalties will be inflicted by the executive committee according to the notes of the observer in the road book.

Value of the Points

The value of marks is fixed in accordance with the following regulations:

Every fraction of a minute of involuntary stoppage is to be debited with .2 point.

Every stop which is made for a repair will be regarded as an involuntary stop, and for this the whole stopping time from the minute of stopping to the minute of starting will be reckoned.

Repairs to speed indicators may only be made in the depots during the free time allowed for repairs. Defects in speed indicators will not be penalized.

Every fraction of a minute by which the repairs to the car exceed the time allowed before the trial starts is debited with .2 point. Late arrival at the start due to any cause will also be penalized by .2 point for each fraction of a minute exceeding the time allowed for starting. If a tube becomes defective on the journey from the depot to the starting place the time for changing the inner tube will not be debited. If an observer is not in his place to time, the car must appear at the starting place without him.

The changing of rims among themselves, as well as repairs or patching of tires, will be penalized by .1 point, irrespective of time. Every alteration of tires is to be regarded as a repair.

Each change of a detachable wheel will be penalized with .1 point. A change of tubes will not be penalized. After the start the filling up of the radiator and brake water will be penalized each time with .5 point. The necessary fuel and oil for the day's journey must be carried in reservoirs or reserve tins on the car, as official replenishment and mid-day stations are not provided. Infringements will be penalized with .1 point.

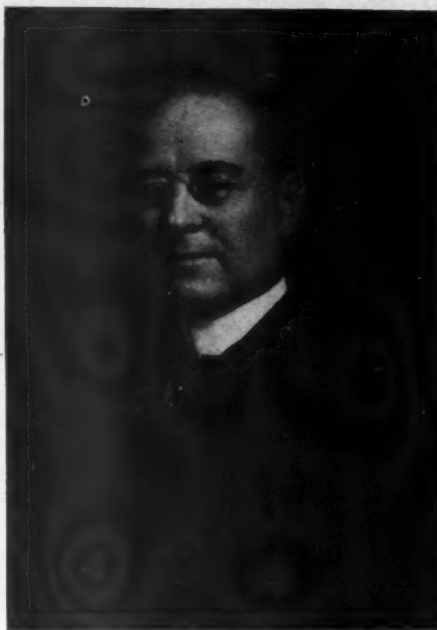
The opening of the exhaust cut-out will be penalized by .1 point.

Lubrication of Chains

Lubrication of chains, except by automatic appliances, will only be allowed once during each day's journey; further lubrication of the chains, as well as lubricating the motor and the car, except by closely attached pipes, is forbidden. Infringements will be penalized with .1 point. Changing of the driving wheels can only be undertaken if the number of cogs is equal to those in the other driving wheel. Contravention of this rule entails disqualification.

The trial includes two-speed tests on the level. Marks will be awarded or deducted according to whether the car exceeds or

Sudden Death of John Farson



THE LATE JOHN FARSON

does not reach the speed arrived at by the following formula:

$$V \text{ km} = 20 \sqrt{PS + 22}$$

For each variation of 1/10 per cent variation from the formula speed, .001 point in the first speed trial and .002 point in the second speed trial will be awarded or deducted. A competing car which withdraws, or is penalized with over 12 points, loses the right to the prize for the speed tests. Immediately after the speed tests cars will be weighed.

Awarding the Prizes

The award of prizes will be finally decided by the executive committee. The winner of the Prince Henry tour, 1910, will be the owner of the car showing the greatest number of points. In the case of a tie the result will be decided on the performances in the second speed test.

For the award of prizes the total marks of those cars only will be considered which reach their destination in fit condition, and which have not been penalized according to paragraph 15. Penalties incurred by tire defects will be ignored. The decision of the executive committee regarding the condition of a car is final.

The executive committee reserves the right to measure at the end of the tour the cylinder dimensions of those cars which are claimants for prizes. Cars which have completed the whole tour in accordance with the regulations without losing marks—with the exception of penalties for not attaining the normal speed and for tire defects—will receive shields of honor. The Prince Henry prize, given by Prince Henry of Prussia, is the main prize. In addition there will be at least five prizes for the five cars best qualified on the total marks, and at least two prizes for the two speed tests.

Chicago Man, Former President of American Automobile Association, Expires Tuesday

CHICAGO, Jan. 18—John Farson, of national prominence in motoring circles, died at an early hour this morning at his residence at Oak Park from heart disease, his illness being of short duration. Without having been sick once in 21 years, Mr. Farson suffered his first attack last Sunday night and while his condition was dangerous last night it was thought he had a chance to survive. However, a relapse came this morning and he passed away, conscious almost to the last and surrounded by members of his family. At the time of his death Mr. Farson was a director of the Chicago Automobile Club and treasurer of the Illinois State Automobile Association. Prior to this he had held several prominent offices in the American Automobile Association, having been president of the national organization in 1906 and first vice-president in 1905 and 1904. Also he had been president of the Chicago Automobile Club prior to Ira M. Cobe, the present incumbent. Undoubtedly he was one of the most powerful friends motoring had in the west, and his death will be greatly regretted by his thousands of friends. Mr. Farson was 54 years of age and was head of the house of Farson, Son & Co., a prominent banking concern.

PAISED BY POSTMASTER

Milwaukee, Wis., Jan. 17—Postmaster David C. Owen, originator of the idea of using motor cars for transportation of the mails in cities, was in Washington last week to report on the results obtained during the third year of this venture in Milwaukee. The general report issued by First Assistant Postmaster General Grandfield shortly afterward, based on results in Milwaukee, Washington, Boston and Indianapolis, is highly favorable to the motor car system. Mr. Owen, of Milwaukee, outlined a complete plan before announcing his intentions, and these plans are used in the other cities where motor mail transportation is now used. The contract system is in vogue. The companies furnishing the cars keep them in repair and provide uniformed operators. The Johnson Service Co., of Milwaukee, built four special-body cars, with steam power, to start with, and this number has been increased to fourteen for Milwaukee alone. Gasoline motors are used in the later models, this company having become a recognized builder of gasoline motor cars since the first effort for the government. It is admitted that the initial expense of motor cars for this purpose is much greater than for horse-drawn vehicles, but the motors are capable of doing from three to four times as much work in the same time, which offsets the additional expense in improved and extended service.

STUDEBAKER-E-M-F HEARING IS POSTPONED

DETROIT, MICH., Jan. 18—Today had been set by Judge Swan, of the United States circuit court, as the date on which arguments would open in the case of the Studebaker Automobile Co. vs. the Everitt-Metzger-Flanders Co., in which the right of the sale of E-M-F cars is in dispute. The unavoidable absence of Attorney John S. Miller, of Chicago, chief counsel for the Studebakers, caused the postponement of the case for a week. Mr. Miller was engaged in Chicago on one of the phases of the John R. Walsh case. He is the attorney who recently succeeded in eliminating the \$29,000,000 fine, recently levied on the Standard Oil Co. and the Studebakers did not like to open the proceedings in the local case without his presence, although the E-M-F company expressed itself as anxious to have the trial proceed according to schedule.

The past week has been signalized by the filing of an almost unprecedented array of affidavits by both sides. No tally of the total of documents filed has been kept, but the figure is estimated at over 2,000, of which the great majority are placed in evidence by the E-M-F company. The usual filing cases of the United States court have proven unequal to the task and the papers in the case have been assigned a large drawer which is now full to overflowing. The array is now said to weigh in the neighborhood of 50 pounds of legal cap, all of which Judge Swan will have to peruse before rendering his decision on the request of the Studebakers for an injunction, preventing the E-M-F from selling cars to other parties, and on the claims of both sides for damages as the result of the annulling of the contract and the resulting litigation.

Affidavits Are Filed

The first batch of affidavits filed during the week came from the E-M-F and were in the form of statements by other manufacturers. W. C. Durant, of the Buick; Benjamin Briscoe, of the Maxwell; W. C. Leland, of the Cadillac; R. C. Hupp, of the Hupmobile, and other presidents of motor car manufacturing concerns, joined in stating that experience had taught them that the very lowest practical discount on which cars could be handled by agents ranged from 18 to 25 per cent. These affidavits were for the obvious purpose of proving poor judgment on the part of the Studebaker company to attempt to place the E-M-F and Flanders cars with agents on the basis of 10 per cent commission or, in some cases, 15 per cent, contingent on the purchase by the dealer of a certain

number of Studebaker-Garford motor cars.

Later in the week the Studebaker company filed an imposing array of documents. To the number of 175 separate statements, Studebaker agents in various parts of the country affirm their loyalty to the South Bend distributors. The Washington agent states that, when congress some time ago voted \$6,000 for a motor car to be used by the speaker of the house, a Studebaker was selected. The statements include many references to the reputation of the Studebaker stamp on the car, flatly denying that its presence on the E-M-F output detracted in the least from the selling qualities of the car. Most of these statements have been made by agents who have refused to take the agency of the E-M-F from the factory, since the legal difficulties arose, and many of whom have considerable sums still on deposit with the Studebaker Automobile Co., as the first installments on E-M-F, Flanders and Studebaker cars. Reference to such deposits forms a feature of nearly every one of the statements.

Documents in Book Form

The E-M-F company is preparing a considerable number of letters and telegrams which it has received from dealers, in book form and intends to circulate them widely among the members of the trade. One of the volumes already has made its appearance and another is to follow later in the week. Statements regarding the attitude of the Studebaker Automobile Co. on discounts and figures which they quoted to dealers fixing a scale of discounts conditional on the acceptance of Garford cars and farm implements, as well as E-M-F and Flanders cars, are emphasized by the use of italics.

In its manufacturing policy the E-M-F company is now manifesting an attitude of great confidence. During the early stages of the litigation while the Studebakers were scurrying from court to court in their effort to tie the local company up by means of an injunction, the output of the factory was reduced from fifty and sixty cars a day to twenty and a large number of hands were laid off. The clarifying of the situation and the fact that the company was able to move a large number of stored cars which had been accumulating during the early stages of the difficulty, has seen a resumption of activity and at present the factory is putting out in the neighborhood of thirty-five cars a day. An effort is in progress to secure enough help to resume the normal speed of the plant. Large numbers of the firm's employees have, however, gone to work for other motor car manufacturers in the city, the labor market being very lively in Detroit, and considerable difficulty exists at the E-M-F in securing help enough, though the employment bureau is making daily increases in the number of men on its rolls.

The delay during the litigation has also hampered somewhat the delivery of the

Flanders. These cars were to have been in process of delivery January 1. It is now probable that the date will be set back a month, although when deliveries are started, large numbers will come through within a very short time. The E-M-F has now, in spite of its belated start in the selling field, received deposits on enough cars to enable it to go through with the original program of output at the main plant. It hardly will be able to attain the figure of 25,000 cars set for the Flanders plant, however, on account of the delays that have ensued. The show business was far in excess of expectations and a great part of the east and south was covered from New York, agencies being placed and orders for cars received.

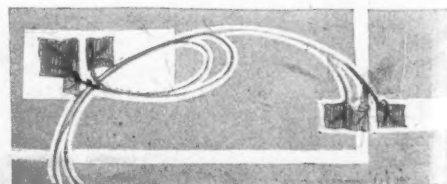
A change is announced by the E-M-F company in the management of its Clark avenue plant where the Flanders are in process of construction, Max Wallering replacing former Factory Manager Crooks.

On Monday evening, January 24, the third annual show of the Detroit Automobile Retailers' Association will be thrown open to the public, in the Wayne gardens which housed the show last season, for the first time. The scheme of decorations is far more ambitious than ever before and, were it not for the fact that the demands for space make it necessary to stage the show on two floors, the local dealers believe they would be in a position to debate the question of superiority with any show in the world. The exhibition will comprise a larger number of makes and a larger number of cars this year than ever before, this fact having been brought about by the large numerical increase in distributing agencies. A total of 290 models of motor cars will be shown.

Lozier Plant in Detroit?

Gossip continues to set aside space here for a new factory, to be constructed by the Lozier company. Local attorneys who have been interested in the deal for some time, announce that the arrangements have been virtually completed and that the Lozier-Detroit Co. will be the result. A considerable portion of the stock has been placed in Detroit.

The Watt Motor Co., of this city, has filed notice of an increase in its capital stock from \$100,000 to \$300,000. Thomas G. Moorehead, president of the company, says that the increase was occasioned by the large demand for stock. The company has a site in Hamtramck and will start construction of its new factory as soon as the frost is out of the ground, it is announced.



HINTS ON MOTOR CAR SHOW DECORATIONS

WITH all the larger cities in the country giving pretentious shows during the winter months and many of the smaller villages holding exhibitions of some sort naturally there arises a demand for information relative to the decoration and exhibition halls because the promoters of these shows realize that without an effective background they are handicapped in their efforts to attract the public. The art of decorating a hall for a motor car show—and it is an art, too,—has called forth the best efforts of the leading decorators and architects of the country and the recent affairs held in the Grand Central palace and Madison Square garden in New York illustrate the great progress made in this line.

Formerly, in the early days of shows, it was customary for each exhibitor to deck out his booth as he saw fit, the result being that the larger concerns with plenty of capital back of them completely eclipsed their smaller rivals and the general result was entirely unsatisfactory and incongruous. Then Samuel A. Miles, general manager of the National Association of Automobile Manufacturers and promoter of the Chicago show, remembered his experiences in promoting bicycle exhibitions and brought into vogue the system of uniform decorations which proved so popular among the manufacturers of bicycles. This scheme consisted of the promoter taking from the exhibitors the work of decorating the stand. The promoter charged for his services, of course, and in turn fitted up each stand just like all the others, so that rich and poor fared alike and there was a general uniformity about the decorations that proved the salvation of the show.

Since those days other American shows have followed suit and gradually the foreigners are becoming interested and while uniform decorations are not the rule in Europe the signs of the times indicate that it will not be long before the foreigners come to the American way of thinking.

It costs a small fortune to properly decorate a national show and the two New York exhibitions cost between \$60,000 and \$75,000 before the doors were open. It is probable Chicago will spend a huge sum in this direction also while even the smaller cities count on spending at least \$1,000 for this purpose. The Association of Licensed Automobile Manufacturers has been greatly interested in the decorative proposition since 1905, when it established a treatment of uniform decorations throughout the garden, doing this by inviting sketches and estimates in the form

of proposals from different concerns. The results speak for themselves and those who saw the garden in all its beauty last week are well satisfied that the A. L. A. M. handled the proposition in the most effective manner. But it has been no easy task. The show committee, the head of which is Colonel George Pope, worked 12 months preparing for the 1910 display, employing an especially trained management and corps of assistants to execute its plans. The services of an architect, W. W. Knowles, to design the general decorative scheme and to superintend the preparation and erection also was required.

The present method of securing the decorative scheme is the same as that employed from time immemorial when the Greek architect designed the theater of Dionysos at Athens, and the Roman architect designed the Colosseum and Circus Maximus at Rome. They made a careful and intimate study of the subject coupled with the knowledge of composition, form, color, and then gradually developed a structure or a decorative scheme that satisfied the conditions and at the same time clothed them in an attractive garb befitting the subject.

The subject being the decorations for any motor car show, the decorator knows that its sole object is to present the motor car and its accessories to the public in the most attractive manner, and to exhibit the same for sale and to the manufacturer for comparison and improvements. To accomplish this the decorator must study the requirements of the exhibitor and the public as interpreted by the show committee; also the physical conditions of the building and reach the following conclusions as a basis for his work:

That the motor car or subject to be

exhibited must be in the foreground or middle distance and the decoration must consist of background and the proper grouping together and framing in of the motor car.

That the display must be open and appear as large and liberal as possible.

That the public portion and exhibitor's spaces are properly proportioned and arranged for the best convenience of both, and that the proper entrances and exits are provided.

That the character of the decoration shall be such that it does not in any way compete with the exhibits, but rather assists in showing the motor car to the best advantage.

That the decoration should be something new and attractive in keeping with the great progress made in the industry.

And then most important and perhaps less understood by the public, the fact that the design of the decorations and construction of same must be of such a nature as to permit of exceptionally rapid erection and completion, and also rapid removal after the show. After the decorative scheme is decided upon, a set of general drawings and specifications are prepared, estimates secured, and separate contracts awarded within the amount of the appropriation.

Then the detail working drawings are prepared and given to the contractors; who start the preparation of all fabrics and pieces in the different shops, all of which is superintended in preparation to avoid mistakes and delay in delivery.

At last the finished materials and pieces are delivered a week before the opening of the show, and hundreds of workmen representing many different trades are set to work to install the decorative scheme, which 6 months before was only a dream on paper, and now begins to assume real form and color, and before the week is out serving the purpose for which it was prepared.

With the above thought in mind, the decorations for the garden show were designed. Suffice it to say that the show provided more and better arranged spaces for the exhibitors, more liberal accommodations for the public, including a series of boxes just above the main floor and also simple and very dignified decorations throughout, so that the decorative scheme in the garden was without a doubt the most successful in the history of the shows in that big building.

Coming Motor Events

JANUARY

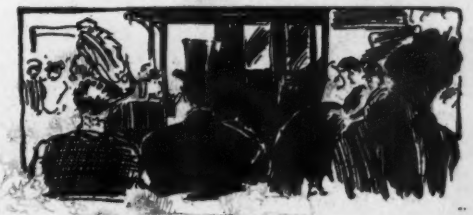
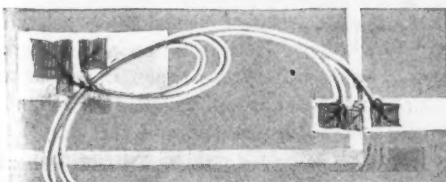
17-22—Show of Kansas City Motor Car Trade Association.
17-31—Philadelphia show.
24-29—Show at Portland, Ore.
24-31—Show at Washington, D. C.
24-29—Ninth annual Detroit show.

FEBRUARY.

4-6—Mardi Gras track meet, New Orleans.
5-12—N. A. A. M. show, Chicago Coliseum.
14-19—Show at Hartford, Conn.
14-21—Show at St. Louis, Mo.
14-18—Annual show at Buffalo.
19-26—Annual show at Minneapolis, Minn.
19-26—Show at Newark, N. J.
19-26—Inter-mountain show, Salt Lake City, Utah.
21-26—Show at Binghamton, N. Y.
21-26—Annual Cincinnati show.
22-27—Milwaukee show.
24-March 3—Canadian motor show at Toronto.
28-March 5—Kansas City Automobile Dealers' Association's show.

MARCH

5-12—Boston show.
21-28—Denver Motor Club show.
26-April 3—Sportsmen's show at Montreal.





The Readers' Clearing House



ESTIMATING MOTOR HORSEPOWER

MILWAUKEE, WIS.—Editor Motor Age—In Motor Age, issue January 6, is discussed a criticism of the A. L. A. M. formula and a supposedly easy formula is written, unsigned, for computing piston displacement. In this discussion it simplifies the numerator of the fraction for piston displacement for the motors of varying cylinders to the quantity $D^2 \times \text{stroke}$, and changes the denominator for the varying cylinder numbers, making the divisor a long decimal, different in each case. Permit me to recommend the following for simplicity, as superior in every respect that it is accurate, avoids the use of the long decimal, and, in fact, is so easy as to make the computation safe where the bore is a fraction a mental operation: $D^2 \times N \times L \times 11/14$. N is the number of cylinders, D is the diameter of the cylinder, L is the length of the stroke, all measurements in inches, and the constant $\frac{1}{4} \pi$. For a 5 by 5 six-cylinder motor the computation becomes the easy computation, $5 \times 5 \times 5 \times 6 \times 11/14 = 589.28$ cubic inches, the whole computation being easier made than written, and the only constant necessary to remember the little fraction $11/14$, which is accurate enough for almost all engineering computations, inasmuch as the average engineer uses $3\frac{1}{7}$ for π instead of the complicated 3.141598 or 3.1416 value. A very difficult and confusing factor in motor rating is found in the fact that the gasoline motor has a number of undetermined factors as yet. When it is possible to take a motor and by the simple expedient of changing the cam profile increase the motor's power as much as 50 per cent formula is of necessity tentative. —Charles E. Leshner.

CARBURETER OR TIMING

San Diego, Cal.—Editor Motor Age—Will Motor Age give an interested reader a little advice on why I cannot get the proper power from my machine, which is a single-cylinder Reo? This car has just been overhauled, valves reground, the batteries are good, as well as the vibrator and coil, and there is about 65 or 70 pounds compression. The machine does not pull on the high gear with one passenger, while its mates carry four or more with ease. In running idle the car shows up very well, but absolutely refuses to pull on high gear on any ascent of any mention. On level streets it runs satisfactorily.—A. E. L.

Your trouble probably is in the carbureter, and it would be advisable to remove the cap containing the needle valve and examine the valve seat. This may have been damaged by screwing down too hard on the needle. In fact, it might be well to give the entire carbureter on

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

THE ACCESSIBLE CAR

Syracuse, Neb.—Editor Motor Age—I have just finished reading the article in Motor Age, Grand Central palace show issue, entitled "Lack of Get-at-able-ness of the Motor Car," and wish to say that, as a reader of Motor Age and a motor car user, Motor Age has expressed my own opinion of the situation exactly, as well as that of thousands of other motor car users. Many have been the hours that I have worked with greasy hands and clothing and ruffled temper making adjustments absolutely necessary, and replacing small broken parts in places hard to get at which with only a little forethought could have been made easy, and many have been the bad things I have said about the designer of that car while so doing. I wish to remind Motor Age that it is in a position to better the industry by continuing to criticize that which it knows to be at fault. Motor Age has the consumer on its side and he is the fellow who has the money.—W. C. Lambeth, Jr.

overhauling if this has not been done already. You also might examine the timing of the spark. To do this remove the plug and lay it on some metal portion of the engine so a spark at its points may be seen, but be careful that the insulated portion to which the wire is attached does not come in contact with any metal portion and cause a short circuit. Then get the motor on its firing center and turn on the switch. If there is a spark at the plug the ignition timing is all right, but if it is necessary to turn the flywheel backward or forward to get the spark, your timing will be out just that much. This may be brought about by a bend in the rod connected to the commutator. It hardly is possible that the valves are out of time or you would not get such good compression. The markings on the flywheel will guide you in checking up the timing. The letters E. O., E. C., I. O. and I. C. stand for exhaust opens, exhaust closes, intake opens and intake closes, respectively. To check up the timing see that the compression release pedal is in a neutral position, expose the valve-stems so they can be seen or felt, then turn the flywheel until the line marked

E. O. approaches an imaginary line drawn through the center of the two bolts and nuts on top and in the center of the crankcase cover. The exhaust valve stem can now be moved slightly, but as soon as the push-rod comes in contact with the valve stem it will tighten; this should happen when the line E. O. on the flywheel is directly opposite the bolts on the crankcase above mentioned. If the exhaust valve is properly timed the others generally are, but it is well to test them all in the same way, for the trouble might lie in a worn cam or a loose one. If the timing is wrong the gears may be improperly meshed.

SPARK COIL CONSTRUCTION

Detroit, Mich.—Editor Motor Age—Concerning the answer to a "Subscriber" in the issue of December 16, under the caption "Has But One Spark," please permit a correction. In the building of all coils for the transformation of a current from one potential to another, great care is taken in every case to insulate the windings from the core. In the majority of cases the secondary coil is electrically connected to the primary winding, though for certain work a coil without this connection is desirable. Under these conditions there always will be found on the coil case two secondary terminals, one of which must be either grounded or connected to a plug with two insulated points. In a non-vibrating coil when the contact is made the current is exceedingly small, and under ordinary conditions would not make a spark as known in motor car practice at all. It is only when the circuit is broken, with a properly-balanced condenser provided that the best results can be had.—J. Edward McAdams.

FAVORS AIR-COOLED CARS

West Lafayette, Ind.—Editor Motor Age—In Motor Age, issue January 6, appeared an article about the Cameron air-cooled cars, and I wish to indorse all that Mr. Yeager said, and some that he left unsaid which will also answer the following paragraph in the same issue by a doctor of Monroe, Ind. I have been the owner of several cars and the Cameron has them all beaten when it comes to economy. Its light weight and the even distribution of it makes greater tire mileage possible. The past 2 weeks the roads have been a glare of ice—the worst in years—and I have been out every day and find that the car does not skid as does the water-cooled cars which of necessity must carry a surplus weight of, at least, 200 pounds on the front wheels. This is what a radiator, pump, pipes, waterjackets, and water for a four-cylinder car would weigh. This weight on a Cameron is removed and carrying the gearbox on the rear axle gives the car an

even distribution of load which is better than any anti-skid device made. In past winters I have waked in the night and began worrying, on account of the extreme cold weather, and wondering if the anti-freeze solution in my radiator was as strong as it should be, and would finally get up, dress and go to the barn—eight out of every ten motor cars are occupying the former domicile of the horse—and draw off the contents of the radiator. This prevented freezing but did not improve my feelings by having my slumbers disturbed. This winter, owning a Cameron air-cooled car, I do not care how cold it gets, and I can sleep all night. For accessibility I have yet to see its equal. It is an ideal doctor's car.—W. S. Walters.

NO TIRES ON OUTSIDE

Chicago—Editor Motor Age—I am a prospective purchaser of one of the best motor cars on the American market, but am inclined to defer buying until some manufacturer or designer of motor bodies develops sufficient gray matter to construct a car which will embody a suitable receptacle for extra tires; to my mind, the attaching of old, or even new tires to any old place on a motor car is absurd and unnecessary, and creates a most unsightly appearance, especially if the tires are old and ragged, which is often the case; in fact, there is no place on the exterior of a motor car where tires should be carried. It would be just as reasonable and no less objectionable to hang a 10-gallon can of gasoline on the exterior of a car, as it is to carry a bundle of tires strapped on the machine.—L. M. Richardson.

Motor Age heartily agrees with you and has been drawing the attention of the makers to this point for the last 10 months. It is to be hoped that the advent of the torpedo body will to some extent answer this question, as it offers better opportunities for carrying out the carrying of baggage inside the body. Not only should arrangements be made regarding tires, but gas tanks, battery boxes and tool cases should be made to at least appear a part of the body itself.

BUILDS HIS OWN GARAGE

Lyndon, Ky.—Editor Motor Age—Last August I wrote Motor Age for plans for a small garage and the ones published subsequently were very expensive, therefore I take the liberty of sending a photograph and description of a neat and inexpensive garage I built from my own plans. The building is 13 feet wide, 18 feet long and 8 feet high. The door opening is 7 feet wide, fitted with two batten doors. They are held open by an iron rod hinging to the corner of the building. There are two windows opposite the ones showing. As this is a boys' school and there are some little children living in a cottage near the garage, I covered the windows with heavy wire netting. While we are in Florida and the machine is out of use this winter I shall cover the windows from the

inside to darken the room. The framework was erected as if to build a frame building, except that it was more thoroughly braced. I then covered the studding, inside and out, with expanded metal lath and stuccoed the building all over with cement plaster. After this hardened I put on the corner pieces and built the panels as indicated. These are made from strips 4 inches wide and $\frac{3}{8}$ -inch thick, and each one covers a corresponding brace under the plaster. The floor, of course, is concrete. There is a shelf on each side between the windows, and in one of the corners. While I did not keep an exact account of the cost, I think I am safe in saying that the building cost less than \$200. The white strip next the building is made of crushed rock screenings to prevent the drip from the roof staining the white walls. The only change I would suggest for those who wish to copy this plan is to have the roof covering to extend across the comb instead of parallel to it, as I believe it would look better. Of course the building can be covered with shingles, tin, or anything to suit the owner.—C. W. Fowler.

TIMING A CADILLAC

Arlington Heights, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly inform me as to the timing of a single-cylinder Cadillac, model M? After the explosion occurs in what position should the connecting rod be when the exhaust valve opens? When should the intake open? How many $2\frac{1}{2}$ by 6 batteries should be used to run a Splitdorf coil?—G. F. S.

The exhaust valve should open when the piston is $\frac{1}{8}$ of an inch from the bottom center on the explosion stroke, and should close when the piston is $\frac{1}{2}$ inch past the following top center. The intake valve opens about $\frac{1}{2}$ inch of piston travel after the exhaust valve closes. If the exhaust valve timing is correct, the intake valve timing also is generally correct, even

though it should vary slightly from the figures above given. The piston is spoken of as being on its top center when it is nearest the cylinder head, and at its bottom center at the opposite end of its stroke. Four $1\frac{1}{2}$ -volt batteries, $2\frac{1}{2}$ inches in diameter and 6 inches high, are generally required to operate a Splitdorf coil.

SHAFT VS. CHAIN DRIVE

Rockford, Ill.—Editor Motor Age—I take great pleasure in reading the many Clearing House communications on various mechanical and motoring subjects, and now wish to express my opinion on shaft and chain-drive as used by our makers at present. The chain-drive has several advantages on heavy, high-powered cars. It is a known fact that one of the weakest points of a car is the bevel gears which have to transmit all the power required to move the car. The use of the chain enables the bevels to be made of nearly the same size which is considered better than the great difference in size as used on shaft-drive. Another advantage obtained by chain-drive is that part of the increased ratio of the motorshaft in relation to the rear driver is obtained in proportion to the difference in size of the sprockets, thus reducing the strain on the jackshaft bevels to a certain extent. The chain-drive, having a stationary axle, reduces the liability of the rear axle breakage through crystallization and other causes, the rear wheels running on their own bearings, the same as the front ones. The chain also does away with all side and end thrust, which is certain to occur on the bolted-together rear axle housing of the shaft-drive. In regard to the strain on bevel gears, as mentioned above, we might take, for example, a 60-horsepower, or any high-powered car, with a gearing of sixteen teeth on the drive-shaft gear and forty-eight teeth on the rear axle gear, giving a ratio of three to one on the high gear; or, in other words, the motorshaft and driveshaft, containing a sixteen-toothed bevel pinion, make three revolutions to the rear axle, and the large



GARAGE OF C. W. FOWLER, LYNDON, KY.

forty-eight-toothed gears one. For example: We can use eleven-to-one as the low gear ratio. The car is stopped at the foot of a steep grade. In starting the driver selects the low gear, eleven-to-one. The two bevels give three-to-one, which leaves eight-to-one to be obtained between the small sixteen-tooth gear and the motor. This is done by the transmission which is between the rear axle and the motor. Therefore, the small bevel, its bearings, and housing must be so constructed as to withstand and deliver eight times the power that can be developed by the motor regardless of horsepower. At present, the writer knows of but one transmission that has its bevel gears placed in such a position as to receive the least possible percentage of power required to drive the car. The patented Cameron transmission, manufactured and used by the Cameron Car Co., of Beverly, Mass., has its change gears placed between the bevel gears and rear axle instead of between motor and bevels. The advantage is plain to be seen, as the small bevel never receives more strain than is developed by the motor regardless of the ratio of speed selected. The Cameron gears are assembled within a solid drop forged yoke, instead of a combination of several parts, thus absolutely doing away with all side and end pressure on the rear axle and its housing, which is most important.

Now, back to the chain-drive which still has a number of advantages—one is the doing away with the universal joint. The chain, also, has a number of disadvantages. With the chain-drive, we still retain the bevel gears and the differential; then comes the extras, namely, a heavy jackshaft and bearings, four sprockets, and two chains, with liability of stretching, wearing, breaking, and added friction complication and weight. It is the writer's opinion that all there is to be said in behalf of the chain-drive for light and medium-weight cars is increased complication and weight, which are two great items that wise buyers are seeking to avoid. At present the most practical drive seems to be the rear axle gearset transmission together with a full-floating rear axle.—Charles W. Yeager.

GET THE PURE ARTICLE

Petersburg, Va.—Editor Motor Age—Acting upon advice given through these columns some time ago, I have filled the radiator of my Regal car with a compound composed of 4 pounds of calcium chloride to each gallon of water. This is working nicely as a non-freezing solution, but I am advised that this solution will injure the waterjackets in the car, which I understand are copper-lined. I may be mistaken about the waterjacket being lined with copper and Motor Age may be better informed in the matter. At any rate I will appreciate it if Motor Age will advise me in this regard. I want a non-freezing solution, as it is very inconvenient to turn the water from the radiator every day, but I

do not want to use any solution that will injure the car.—J. B. Andrews.

Calcium chloride, CaCl_2 , is a very effective cooling agent, but unless the chemically-pure article is used there is danger of corrosion of the metal with which it comes in contact, be it copper or cast-iron. Crude calcium chloride retails at about 8 cents or 10 cents per pound, but the chemically-pure article is worth about 25 cents a pound in small quantities. A solution of 4 pounds of calcium chloride to each gallon of water will not freeze at any temperature above 17 degrees below zero. If chemically-pure calcium chloride is used no trouble will result; but chloride of lime, CaOCl_2 , often sold as the pure article, should be avoided. If you prefer another solution, however, the following combinations of half alcohol, half glycerine and water may be satisfactorily used:

Percentage in water	Freezing point
10	25
20	15
25	8
30	-5
35	-15

The Regal jackets are not copper-lined.

A. L. A. M. FORMULA AGAIN

Baraboo, Wis.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give the A. L. A. M. formula for rating gasoline motors.—A Reader.

D² X N

The A. L. A. M. formula is — or 2.5

the diameter of a cylinder multiplied by itself, times the number of cylinders, divided by 2.5. 2.5 being a constant based on the average view of the mechanical branch of the association, as to a fair conservative rating.

WINTER CARE OF TIRES

Preston, Ia.—Editor Motor Age—Will Motor Age inform me, through the Readers' Clearing House, if the severe cold weather is injurious to the tires if left on a car which is kept in a barn where the temperature at times gets as low as zero? What would Motor Age advise in case the freezing temperature is harmful to tires? —W. A. Altfilisch.

It is claimed by a good authority that cold weather under the conditions you mention, would have no ill effect upon rubber tires; it would be beneficial, however, to jack the car up to relieve the tires of the strain of the load. Some advise removing the tires from the wheels, and wrapping them in light-proof and moisture-proof material, then storing them in a cool, dry place. Heat, light and oil are the three natural enemies of rubber tires.

LARGER TIRES PREFERRED

Carthage, Ind.—Editor Motor Age—In looking over several of the medium-priced cars, I noticed that most of them were equipped with 34-inch by 3½-inch tires. The dealers generally admitted the cars would weigh from 2,600 to 2,800 pounds, fully equipped. Are 34-inch by 3½-inch tires large enough for this weight, or

would it be cheaper in the end to have 35 by 4-inch tires?—Howarde Henley.

The proportion between carrying capacity and tire size, as adopted by American tire manufacturers, is 600 pounds per wheel for 34-inch by 3½-inch tires. Considering, then, that all wheels carried an equal load, which is generally by no means the case, the proper carrying capacity of these tires would be 2,400 pounds. It would, therefore, under such conditions, be more economical to use the larger tires.

DIFFERENTIALS IN FRICTION CARS

Bloomfield, Ind.—Editor Motor Age—In Motor Age, issue January 13, appeared a communication under the caption "After Differential Facts," by K. A. K., of Detroit. Will say that there are successful cars without a differential, having a mainshaft from the engine which carries two disks, their weight serving for the fly-wheel; from between these disks extend two short jackshafts, on which are the two friction wheels brought against the disks by a U-shaped hanger, with stud bolts above and below for adjustment, the outer ends of these jackshafts carrying the sprocket for a double chain-drive. The U-shaped hanger serves to press one of the friction wheels against the front disk and the other against the rear disk, which rolls the driving wheels either backward or forward, as desired, the pressure being the same on each disk. There is no end thrust on the engine.—W. E. Wright.

REGAL PLUGGER, ANSWER

Maquoketa, Ia.—Editor Motor Age—In reading the account of the Regal Plugger's trip from New York to San Francisco, it says it is 150 miles from Clinton to Cedar Rapids, Ia., and hilly roads. I would like to ask if Motor Age knows which way they went. I have been over one road several times and my speedometer only registers 94 miles and only two hills. My route is via Lyons, Bryant, Charlotte, on what is called the ridge road to three miles south of Maquoketa, then northwest to Monmouth, thence to Olin, Paralta, Mastella, Springville, Marion and Cedar Rapids.—W. W. Ogden.

STORAGE BATTERY VS. DRY CELLS

Clifton, Ill.—Editor Motor Age—Will Motor Age kindly tell me what if any advantage is gained by exchanging dry cells for a storage battery? Would I get any more power out of the motor? I use six dry cells. How many times can a storage battery be recharged before it is useless, and what is the life of one recharged?—Henry Christensen.

The advantage of a storage battery over dry cells is that the voltage of a storage battery remains constant throughout almost the entire life of the charge, and that recharging is possible; whereas, the voltage of a set of dry cells decreases gradually, the intensity of the spark also decreases gradually, there is a falling off in horsepower, it is claimed that more gasoline is consumed to make up for the

lack of intensity of the spark, more frequent adjustment of the coils is necessary, after the voltage begins to decrease the general efficiency of the motor is impaired, and recharging is impossible. As long as the dry cells maintain a pressure of 6 volts you get just as much power from your motor as you would with a storage battery of 6 volts. It is impossible to state the number of times a storage battery might be re-charged, for all depends upon the material and design of the battery, the care and attention given to it, and its adaptability to the work it is called upon to do. The life of a reputable storage battery in constant use for the ignition of a four-cylinder motor might be approximated at about 2½ years, and it is advisable to recharge the battery about once a month. The life of a charge depends, to a great extent, upon the adjustment of the coils and the condition of the circuit. A 6-volt storage battery should run a four-cylinder motor about 700 miles on a charge.

HORN AND HORSEPOWER

Northwood, N. D.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me whether or not the Jericho horn is operated by electricity or exhaust, or either? What horsepower would a model 10 Buick develop at a speed of 1,000 revolutions per minute?—P. W. Chantland.

The Jericho horn is an exhaust horn which is attached to the muffler outlet pipe or to the muffler itself. Full particulars are given in booklet 64, issued by the Randall-Faichney Co., Boston, Mass. A model 10 Buick motor which has a bore and stroke of 3¾ inches would develop approximately 18.77 horsepower at 1,000 revolutions per minute.

WRITE THE MAKER

Cleveland, O.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, give me the address of a reliable source of information regarding burnt-out magnetos, or give me information relative to same.—J. V. Dillman.

Correspondence with the manufacturer of the magneto should be the best source of information.

SCHEME IMPRACTICAL

Eagle Grove, Ia.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, please explain how to wire a model T Ford magneto for electric lights.—C. P. Myklebust.

It is impractical to use the current from any magneto to light a car. The only way is to use a battery or generator.

NO WAY TO DO IT

Milwaukee, Wis.—Editor Motor Age—I have about 2 gallons of good cylinder oil, the accumulations from my floor drip pan in the garage, which I would like to make use of again, but cannot do so on account of the dirt and impurities that have become mixed with it. Will Motor Age, through the Readers' Clearing House, kindly

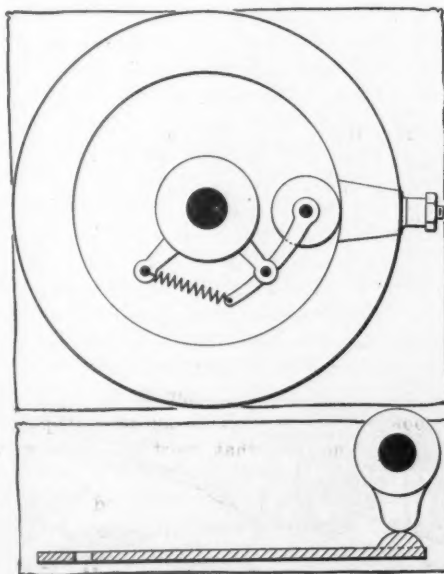
advise me how I can clarify this oil so it can be used in the cylinders again.—W. P. W.

There is no satisfactory way of filtering this oil so as to use it again.

MISSSES ON SLOW SPEEDS

Cincinnati, O.—Editor Motor Age—Will Motor Age tell me what causes my two-cylinder opposed motor with 4½-inch bore and 5-inch stroke to miss on slow speeds when running idle. I have tried everything I know of but can find no way of stopping the miss. The motor has automatic intake valves. Would it help any if I should put on a timer of the type in Fig. 1 to take the place of the one now on, see Fig. 2, or can I use an ordinary timer for two cylinders with my single coil? How is a distributor connected up? What would cause a four-cylinder motor, after new piston rings have been put in, to run awhile, then miss, finally stop, and then repeat this performance over and over? The gasoline flow is all right, the carbureter is set perfectly and the battery and coils apparently are all right. This same motor when well oiled and turned over a few times would work all right for a time and then begin to work stiff and hard again. After cleaning and applying a different oil the engine works nicely, except for the miss and occasional stopping. Can Motor Age explain why this is when the same oil works very well in a two-cylinder motor?—A Subscriber.

Probably the reason your motor misses on slow speed is due to the tension on the intake valve spring not being the same. It might also be caused by a loose joint in the intake manifold where the manifold is connected to the cylinder. The change from the one timer to the other time you describe would not do any good, one being equally as good as the other so far as making contact is concerned. If you use an ordinary timer for a single coil with two cylinders, you must have either a double-pointed cam with the points set 180 degrees apart or else make a connection



FIGS. 1 AND 2—TIMER TYPE 8071

from one contact terminal to the other to enable you to get two contacts to each revolution of the camshaft. A distributor is advised for timing the spark and for distributing the secondary current to spark plugs as necessary. From your commutator terminal on the coil you wire to the timer on the distributor. From the secondary terminal on the coil you wire to the distributing terminal on the distributor. From the other terminals on the distributor you would wire to the spark plugs if on a two-cylinder engine. There is no apparent reason for your four-cylinder motor acting as it does unless it is that your lubricating oil is too heavy to be properly distributed to the bearings and pistons or that your connections between the carbureter and cylinder are not tight. Motor Age would recommend that you use the grade of oil that is working satisfactorily and make sure that you get it where you want it, and think that a little adjustment of the carbureter and making sure that the contact points in your commutator are all right will remedy the trouble.

GEAR RATIOS

Nauvoo, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me the high and low gear ratios of the Ford model T, the Buick model 10 and the Ford model S?—H. T. Baxter.

The gear ratios of the Ford models T and S are practically the same, 37/11 to 1 on high, and 75/10 to 1 on the low gear. The Buick model 10 is rated 3 to 1 on high, and 12 to 1 on the low gear.

THE BILLY MOTOR

Teague, Tex.—Editor Motor Age—Will Motor Age advise me what motor is used in the Billy car sold by the American Sales Co., of Atlanta, Ga., and has the motor been used in any other car?—E. B. St. Clair.

The motor used in the Billy car was designed, it is claimed, by Mr. McNabb, of the McNabb Iron Works, Atlanta, Ga., and made specially for the Billy car. It is of a conventional type, and Motor Age never has heard of its being used in any other car.

ALCOHOL RECOMMENDED

Trenton, N. J.—Editor Motor Age—Through the Readers' Clearing House will Motor Age be kind enough to tell me what I can mix with water to keep it from freezing in the acetylene generator.—Irving D. Banks.

Alcohol, about 1 part to 3 of water, should keep the water from freezing in your generator and should not have much effect on the light.

NO ORMOND MEET THIS YEAR

Lansing, Mich.—Editor Motor Age—Will Motor Age inform me when the Ormond-Daytona races will come off?—U. H. Forster.

There will not be a meet this year.



Manufacturers' Communications



WANTS GLIDDEN CUP RETAINED

NEW YORK—Editor Motor Age—In view of the recommendation made by an official of the American Automobile Association relative to discarding the famous Glidden trophy and returning it to its donor, Charles J. Glidden, I take this opportunity to protest any such action by the contest board of the A. A. A. I protest not only for the Maxwell concern, but for many other concerns holding membership in the Manufacturers' Contest Association and which have competed for this trophy since its presentation to the A. A. A. To discard this classic touring trophy of the country at this time, after it has accomplished so much good for the industry is, in my opinion, an extraordinary action and one which would be regretted not only by motor car makers but by the public as well. Surely no motoring trophy ever competed for in this country has done so much toward the progression of the motor car industry; not excepting even the Vanderbilt cup.

Donated in the early days when the motor car was looked upon as the rich man's toy, it created enthusiasm throughout the territories through which the Glidden tour was run; it showed the public in general that the motor car could accomplish all that was claimed for it; it demonstrated that the horseless carriage had become a permanent fixture in social and business life; it has done more than anything else to sound the death knell of the horse and its relegation to the farm; it has given manufacturers a superior opportunity to learn the strong and weak points of their cars, which could not have been learned under general touring conditions. This, in brief, is what the Glidden trophy has done for the industry, sport and pastime, and it is this same famous classic trophy that certain interests would now bury in the historic archives of motordom.

The Glidden tour is well known by the public at large, from Boston on the east to the Golden Gate on the west, from the Gulf of Mexico to the great lakes. It is the public barometer as to what the various cars can do in endurance, mountain-climbing, plunging through sand or gumbo, or speeding over macadam roads. The Glidden tour has taken the cars through country hardly passable by horse vehicles, and has fully demonstrated that the motor car can accomplish what no other form of transportation can.

None of these would have been learned so rapidly if not for Mr. Glidden's generous offer in donating the famous trophy which bears his name. As a pioneer, he certainly is entitled to any credit which may be his.

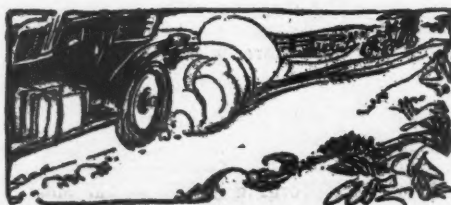
Personally I believe that too much credit cannot be given him for his foresight and keen intuition of the benefits to be derived from an annual contest such as the Glidden tour has developed into. I doubt if Mr. Glidden himself even dreamed what wonderful beneficial results would be accomplished for the motor car when he first donated the trophy which has been contested for so many years.

To me it sounds inconsistent for this A. A. A. official to recommend the withdrawal of the Glidden trophy and offer certificates in its place, when in the same statement he says: "At this time suitable resolution should be offered expressing the appreciation of our association to the generous donor of the Glidden trophy, and a committee appointed to present such resolution to Mr. Glidden, with power to arrange with him as to the disposition of this trophy. Too much credit cannot be given Charles J. Glidden for his generosity and foresight in offering this trophy which has made it possible for this tour to become an event of national importance."

In other words, the recommendation is made to withdraw the trophy when in the same breath it is conceded that in offering the trophy Mr. Glidden "has made it possible for this tour to become an event of national importance." Let us keep the trophy and continue it in the high place which it has earned.—Benjamin Briscoe, president Manufacturers' Contest Association.

GOODRICH FABRIC

Akron, O.—Editor Motor Age—Our company uses each year 1,200,000 yards of fabrics. This is 3,600,000 feet. Each yard of fabric is cut into five strips for the manufacture of tires and were this continuous strip, 9 inches in width, to be laid in a straight line that strip would lead across the continent from Boston to San Francisco and then down almost to Los Angeles. The total mileage is 3,409. Every yard of that fabric is carefully selected and much is discarded as unfit for tires. Every yard of cotton cloth used in the Goodrich tire is made under direct supervision of a representative of the factory and special appliances are used in the factory to determine the tensile strength of the fabric before it is passed for tires. It must be up to the Goodrich grade before being passed.—B. F. Goodrich Co.



PROPER INFLATION OF TIRES

Akron, O.—Editor Motor Age—All owners of motor cars as well as the trade will be interested in tests recently made at our factory in Akron, with regard to the use of gas for inflating tires as compared with the use of air. The tests showed that gas in place of air will do for inflation of tires, if the user will but watch his tires and replace gas which escapes. But right here is the troublesome point. Not all owners watch their tires carefully enough, and even for those who do it is almost impossible to notice the constant leakage that goes on when gas is used. In one way or another gas will seep out of the tires by imperceptible degrees and more rapidly than air. As our tests have shown, the leakage of the best gas-filled tire was 43 per cent greater than in any one of the air-filled tires. The tests also served to emphasize the need of ample inflation of tires whether it be by gas or by air.

At our plant three tires were pumped by air to 100 pounds pressure each at 1:30 p. m. October 14. At the same time three tires of the same size were inflated with carbonic gas to the same pressure. A week later, October 21, at 1:30 p. m., the three air-filled tires registered 92 pounds each, while the three gas-filled tires stood 41, 50 and 51 pounds, respectively.

Should an owner pump his tires to 100 pounds with gas and not have a noticeable puncture he is likely to take for granted even a week later that he has been running with sufficient inflation. As a matter of fact he really has only half enough and during the intervening time considerable damage may have been done to the body of the tire.

The meat of these recent tests, previous tests, and of many years of experience, can be summed up in one terse sentence: Tires must be pumped up hard if they are to give a maximum mileage. There is only one sure way of properly inflating tires so that they will give the most service of which they are capable and that is to keep them pumped up so hard that they stand up full and round under a maximum load when in motion. If this is done there will be a decided increase in tire mileage. The element of friction and heating is reduced by ample inflation which also checks the movement within the tire and enables you to ride, as you should ride, on a cushion of air and not a cushion of rubber. And in this connection it is just as much the duty of the user to supply plenty of air as it is of the producer to supply good tires. Each expects the other to do his part, and the co-operation should be of mutual benefit. It will result in a reduced up-keep cost that must ultimately

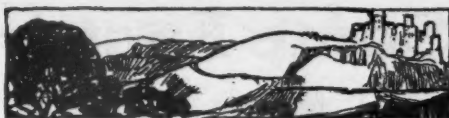
be of great benefit to the industry as a whole.

Users should watch their tires and when they do not stand up round under a full load, should immediately supply new air. The one safe rule is to do this at once, remembering that pressure gauges do not provide for the overloaded tire, and four-fifths of all tires are frequently overloaded. The best available answer to the overloaded tire is the size of tire next larger than that usually applied. The only answer of any kind is that of air, and still more air, and nowhere do the results show faster than in the service given by the tire overloaded as a regular thing.

Another thing that should be constantly kept in mind by the car owner is not to wait until all four tires are in need of air before using the pump. Don't let one tire get partially deflated and run your car in that condition. Not only is the effect very bad on the deflated tire, but the other tires are subjected to extra work that can only work injury to them. Keep your tires pumped up hard—all of them—all the time.—Joseph W. Conner, Diamond Rubber Co.

LIMITING CAR PRODUCTION

Hartford, Conn.—Editor Motor Age—That the production of motor cars for the season at hand is to be seriously limited



and that manufacturers will not be able to realize the demand is now evidenced. The signs of demand are to be read at this time and a canvass of prospective owners the country over fairly estimates the figures of need. It also has come to be known that manufacturers will be unable to satisfy the demands expressed in the canvass which has been made. A number of reasons have been put forward to explain the inability of manufacturers to meet fully this known demand.

The advantage in the supply of rubber has been given as a principal reason, since makers will be unable to secure enough tires to supply the trade, and there may be some truth in this. It is a fact that the price of crude rubber has steadily risen since the motor car came to be a large factor in transportation. The inability of parts makers to deliver to makers sufficient parts not manufactured directly, also is cited and another feature has been the very large demands made for new machinery. While each of these reasons contributes to make the situation acute, it is probably not for these reasons that the number of cars to be manufactured will fail to satisfy the probable demand.

The fly in the manufacturer's ointment now appears to be the matter of drop forgings. Since it has been established that steel castings do not fully meet the requirements of motor car building practice, and since it is known that drop forgings alone may be counted upon to give the necessary strength and appropriateness of design, the situation revolves about the ability of the manufacturers to secure suitable drop forgings. Since principal parts such as steering connections, brake levers, spring hangers, universal joints, etc., are now drop forged in best building practice, the part played by drop forgings is considerable.

Drop forgings are realized from the heating of billets of metal in high-heat oil furnaces and then pounding them into suitable shape between dies. The dies are held, one stationary and the other in a carrier, which is elevated by power and then allowed to fall by its own great weight. The dangers of drop forging occur in raising the steel billet to a degree of heat too great when the blows of the drop dies quickly give to the mass form but take from the life of the metal, or again in striking the steel when it has begun to chill and serious bruises occur which later appear in flaws and serious fractures. Both of these detriments are occasioned in a rush of manufacture when too much is attempted in too few heats of the metal. The rush of production makes the temptation of both of these bad practices in drop forging.

Though drop forging is perhaps the most

vital feature of motor car manufacture, few makers essay to do this work, but rather engage it under contract. This is true of even large makers. Our company, however, is fortunate enough to have in operation in our factory at Hartford, Conn., eight big drop hammers and three steam hammers, and to make all of its own drop forgings.—Columbia Motor Car Co.

THOMAS BORE AND STROKE

Los Angeles, Cal.—Editor Motor Age—We notice that on page 4, also on page 8, of the January 6 issue of Motor Age that the bore and stroke of the Thomas little six is given as being 3 $\frac{3}{8}$ -inch bore and 4 $\frac{1}{8}$ -inch stroke. We beg to advise that this is the bore and stroke of the model L or 1909 Thomas little six. The model M, or re-designed 1910 little six, has 4 $\frac{1}{4}$ -inch bore and 5 $\frac{1}{2}$ -inch stroke.—Wilson & Buffington.

WAS MODEL 16 CAMERON

Beverly, Mass.—Editor Motor Age—The Cameron car, illustrated in Motor December 30, on page 43, is a model 16 four-cylinder touring car instead of a model 10. Several of our agents have made inquiries regarding this model 10, therefore we would appreciate it if Motor Age would make the correction.—Cameron Car Co., G. N. Jordan, sales manager.

FARMERS AIR THEIR VIEWS

Hartford, Conn., Jan. 17—In view of all the criticism of late regarding the Connecticut state roads, the attitude of the state grange on the subject is interesting. The state grange might well be called the farmers' club, and it is a factor in the community in every sense of the word. It is progressive and gatherings are held occasionally when all sorts of topics concerning the good of the people are discussed. Good roads have claimed the attention of the grangers before this time, but the statement just now made with regard to the state roads is interesting, coming as it does from the agriculturists. The grangers say: "Equal in importance to taxation should be our interest in good roads. Initiated by the grange, we may feel that its development has been due to our effort. The question at the present time is not so much in the building of these as it is in their maintenance. A great deal has been said recently in regard to their faulty construction, but, in our opinion, most of it is due to their faulty use. There was very little trouble before the speeding motor car came into general use. Commissioners in all states working under state aid plans report that 53 per cent of the repair expense is due to motor cars and that it will require \$300,000 to make those repairs now needed. Last year New Jersey expended over \$700,000 on repairs alone, New York has 1,600 miles of gravel road which needs immediate overhauling due to this traffic, which is so heavy now."

WHEEL TAX SUSTAINED

Washington, D. C., Jan. 16—A bomb was exploded among the motorists of this city yesterday when Justice Wright, sitting in the district supreme court, ruled that the motor car wheel tax law was valid. As set forth in Motor Age at the time, when the district appropriation bill was before congress last winter a rider was tacked to the bill imposing a wheel tax on all motor cars owned and operated in the District of Columbia, the tax being \$3 for each two-seated car and \$2 for each additional seat where there are seats for more than two persons. The bill finally became a law and then it was discovered to be glaringly defective in that no penalty for violating it was provided. The authorities made several futile attempts to put the law into effect and finally it was decided to make a test case in order to test the validity of the law. Leroy Mark, a former secretary of the Automobile Club of Washington, brought suit to have the law declared invalid, on the ground that the tax was double, motor cars already being taxed under the personal tax law, and on the ground that it was an unlawful discrimination to select one class of vehicles for taxation without taxing other vehicles.

In his opinion Justice Wright set forth the belief that the tax might be imposed if it was done for a specific purpose, such as a road tax or a wheel tax, and limited to motor cars used on the streets and roads, but would not apply to motor cars not so used, the language of the law being "used and operated."

Introduction

PRODUCTION has two phases, quality and quantity. Inexperience, bestride the horse of conceit, invariably rides to the land of false conclusions, one of which is that quality is a rare bird whose plumage would be smirched were it to perch on quantity. Quantity production in a shop may be due to numbers of simultaneous reproductions of the respective parts, even at a slow rate for each, or it may be due to refinement of process and construction.

Quality of product may be on a high plane, when quantity is due to many simultaneous efforts, but it is positively present in the process that includes refinement of method. Refinement of method has many ramifications, as the elimination of the personal equation by employing jigs, special tools, fixtures, perfect drawings, shop system, engineers, and suitable materials, with instruments of precision of every character to lend confidence to judgment.

It is not the sight on a gun barrel that makes the marksman, but the sight as an instrument of precision is of the greatest utility to the man behind the gun. Follow this simile a little further and use it to show that quality and quantity are—in a sense—synonymous. Without the sight on the gun the good marksman would miss his target more readily than with it; with the sight as a guide, more shots may be fired with telling result in a given time.

If a thing is done a great many times, it becomes habitual to do it in a routine way, and if that way is right speed will increase automatically, and quality will be on a so-called standard footing. The application of this truth to the problem of the motor car would seem to be simple enough in the plant of Nordyke and Marmion, at Indianapolis, Indiana, which plant was established in 1851.

Here is a plant which offers opportunity to study the machine tool situation, for, owing to the long years it has been in existence, it had to do with every kind of a machine tool that the market afforded. In view of the most advanced methods, which are now being employed in this plant, proof is afforded of the desirability of discarding obsolete tools and incurring the cost of the kind that will do more and better work, assuring interchangeability, and reducing labor, particularly in view of the over-head charges which always have to be figured on a basis of a small percentage on material and a large percentage on labor; it is labor that must be economized, not cost of material.

When it is desired to know the selling price of a product manufactured, it is necessary to separate the factors, as is done in double-entry bookkeeping, and treat with the respective divisions as follows:

A—Cost of material plus a percentage for handling and storing;

B—Cost of labor, of the class which

Some Factory Operations

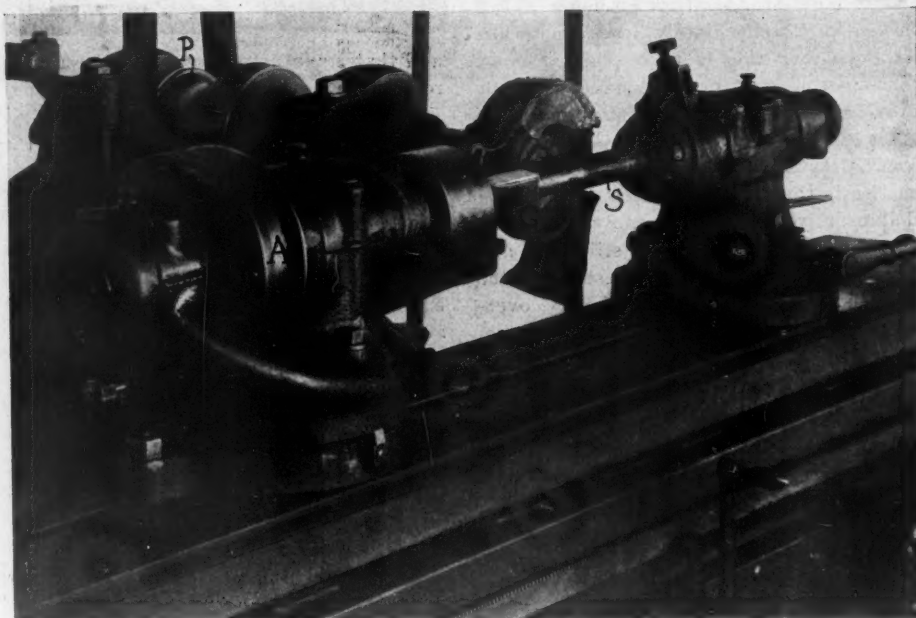


FIG. 1—GRINDING A FACE ON A SQUARE SHAFT S

The Grinding Process

WHEN a piece of work is being turned in a lathe all the little inaccuracies of the tool itself are imparted to the work that is being done; true, a workman of great skill and dexterity will come close to size. If, on the other hand, the work is set up in centers, and a grinder is brought into contact, the principle of tangents is involved and the inaccuracies of the tool are not imparted to the work.

Take the work that is being done in the grinder shown in Fig. 1, with the work held in rigid relation. The work, a square shaft S, is held on true centers on a line passing through the axis of the head A and the tail B. The grinder G, on its spindle held in rigid bearings, rotates at a high speed, which is imparted by the belt, over the pulley P, and the feed is so arranged that the grinder feeds up against the square shaft, and then parallel to its axis—the work moving for the required distance to accomplish the task. There are three points in favor of this method; it does quicker, closer and finer work; the square shafts will fit in its broached hole, on assembling, to a nicety and scraping by hand is eliminated, hence the personal equation is eliminated.

In the same way cylinders, crankshafts, camshafts, and such other parts as gear shafts, etc., may be ground; the grinding tools differ in each class of work, but the principle is the same; the work or piece to be ground is held in rigid relation, and the grinding wheel twirling at an enormous speed in some cases, always at a high speed, touches lightly, hence does not deform the work or spring the tool, and makes a tangent cut rather than following around the work or holding the tool while the work rotates as in tool machining.

The grinding principle, then, is employed to quickly and accurately ply the finishing touches to all work, and experience has shown that 10/1000 can be taken off of a part, at the last, if accuracy is desired, in far less time than the same work can be done in any other kind of a tool. Part of this gain is due to the absence of brutality of the grinder; some, to the ease in setting up the work, and to a vast extent the gain is due to the confidence the workman has in his skill. If a workman is in fear, to go slow is natural, and any process that will lend confidence is quicker and better.

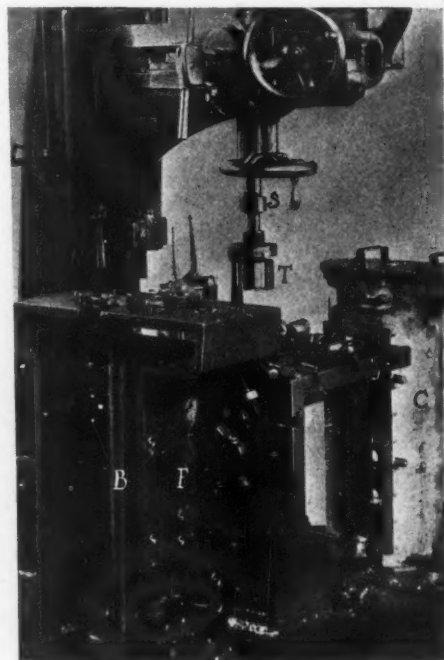


FIG. 2—THE RADIAL DRILL



and Basic Principles

Introduction

engages in the actual work of machining, fitting and assembling the product being manufactured—live labor;

C—Cost of labor, of the class which produces nothing—labor employed in an administrative capacity—dead labor.

D—Cost of power, heating, sanitation, cleaning, repairing, light, insurance, interest and other fixed charges of a kindred nature.

E—Cost of advertising, selling, bad debts, losses in transportation—not covered by transportation insurance—depreciation or appreciation of finished stock, etc.

F—Special accounts, contingencies, etc. In practice, if the output each month is compared with the costs including C, D, E and F, these costs may be reduced to a percentage on the cost B, and the result will be as a percentage approximation, in which all the work for that month may be reduced to a basis of cost as follows:

Selling price = [(material + X) + (live labor + Y) + profit]

When

X = The cost of handling and storing the material in per cent.

Y = Costs represented by C, D, E, and F, reduced to a percentage of the live labor represented by B.

If X is equal to 10 per cent of the cost of material, and Y is equal to 100 per cent of the cost of live labor, disregarding profit, it is plain that the interest at 6 per cent on the price of a new machine tool, if it will cut the labor cost in half, can scarcely be so great as to make it unprofitable to purchase and use the new machine tool. It will not be possible to more than reflect this situation, in principle, at this time, on the ground that the several items of cost that enter into the problem are not available, and, in all truth, no two shops are alike in this respect. In a general way, as the principle adequately indicates, that the shop having the best tool equipment will be in a position to excel in quality of product and reduce cost below that of inferior product.

It is not possible to manufacture any kind of machinery in an interchangeable basis if the work has to be laid out in the old-fashioned way; even if the men who lay out the work are skilled, it can not be assumed with certainty that each one of the men so engaged will be exactly alike in skill, or is any one man equally accurate every day in the week. It follows that, to assure interchangeability, as a component part of the plan of manufacture, jigs must be used, and they, to be capable, must be made to drawing, from drawings that represent perfectly the parts to be manufactured. Even when jigs are used, and assuming that drawings are available for every operation, the chances of falling short of the goal called interchangeability, will be good, unless limits of tolerance are given, so that the algebraic sum of all the differences will be 0.

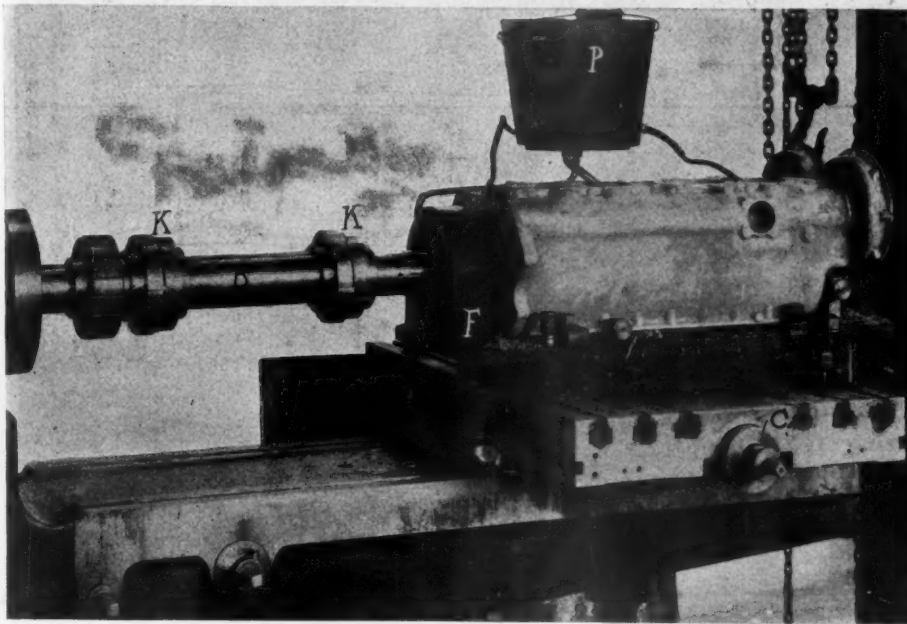


FIG. 3—BORING THE MAIN BEARINGS OF A CRANKCASE

Boring Pays Dividends

THE motor crankcase is shown, Fig. 3, undergoing the boring operations for the crankshaft main bearings, and the fixture F, bolted to the platen, serves as the guide for the bar B and the cutters K on the bar perform all the operations at one setting, assuring perfect alignment of the bearings, due to the simultaneous finishing of all the surfaces, using a single floating bar of large diameter. The work is lubricated by a lubricant contained in the pail P, passing through hose to the four points of the cutters. In preparing the work in the act of setting up, the cross-feed C is used, and the vertical centering is fixed

by the designer of the fixture F, so that this phase of the problem is cancelled. Certain of the operations may be done in a radial drill as illustrated in Fig. 2, and the fixture F is bolted to the platen. The crankcase C is removed to disclose the bar B, and the arm of the radial is free to swing, so that the spindle S, of the tool T, may be brought to any point within the radius of the arm, without interfering with the speed and feed, aided by the movement, in and out, of the tool-head in the guides.

With the crankcase in place the bar B fits into the end bores of the crankcase and is then slipped into the fixture F. Clamp blocks, not shown, fit into the slots at each end of the jig holding the bar home. The ends and top and bottom of the crankcase are faced off before the crankcase is put into the fixture. Wedges with screw adjustment are used against the top face for squaring the piece in the fixture. The fixture is pivoted to a plate which in turn is bolted to the radial drill press table, thus permitting the piece to be drilled on both ends and both sides. All bushings are tool steel and ground to an accuracy necessary in the work. Nineteen holes, all told, the most important in the case, are drilled with this fixture.

That radial drills have many uses is adequately illustrated by Fig. 4. In this case a fixture F holds a spherical cover P, made of aluminum, and a jig plate G has a bushed hole B, through which the tap D is guided to the work W. Lubricant is run to the cutter from the pail P through the hose and the fact that the work is spherical does not Buffalo the artisan, as it would were he required to perform this task unaided by a fixture.

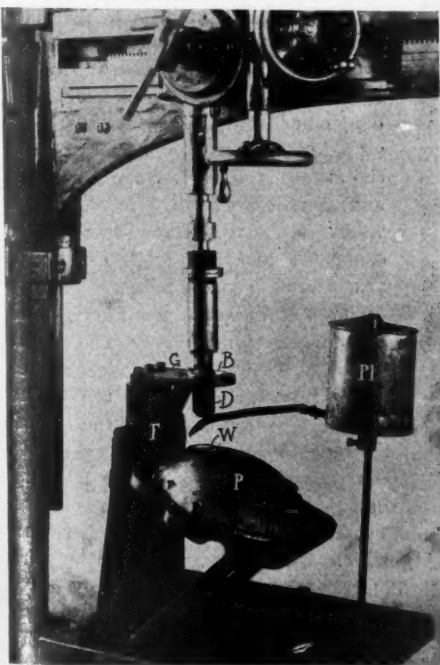


FIG. 4—ONE USE OF RADIAL DRILLS



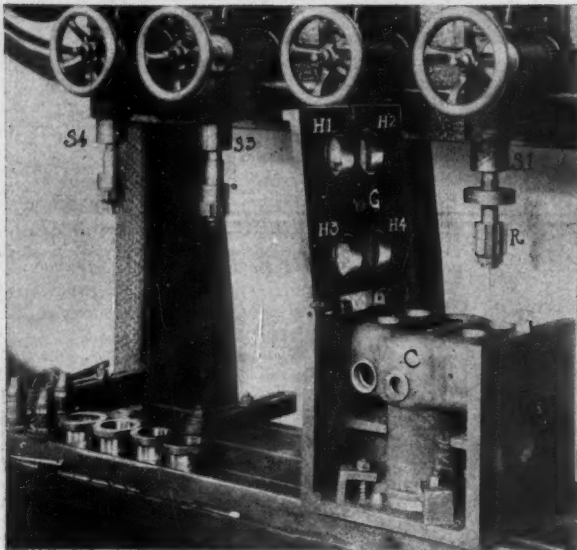


FIG. 5—BOX JIG FOR BORING VALVE COVERS

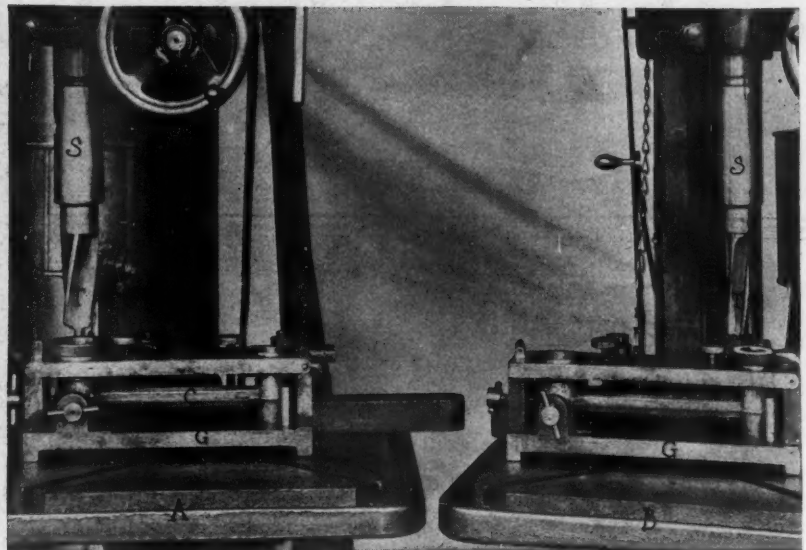


FIG. 6—JIGS FOR DRILLING ENDS OF CONNECTING POLES

Multiple-Drill Work

REFERRING to Fig. 5, it will be observed that a pair of cylinders C are clamped in a fixture F, and there is room to the left for a repetition of the same performance. The top-plate G of the fixture serves as the jig, and the holes, to size, H1, H2, H3 and H4, are fitted with hardened bushings of the proper size to accommodate the tools, which may be drills, reamers or taps; a reamer R is shown, and four spindles, S1, S2, S3 and S4, are so placed that the distance between them may be varied at will and the feed is vertical, as in conventional drill presses. The fixture F has other advantages, among which is the facility of self-centering, so that when the cylinder C is locked in the fixture it comes automatically into the right relation, and the fixture, being located by pins, falls into the right relation to the spindles of the drill, although this is a detail that can be done without, for, since jig holes are used, once the work is locked in properly the holes can not be finished excepting as the jig indicates.

From the multiple-spindle drill to the performance of dual operations on a single spindle drill is a far distance, but Fig. 6 depicts the method employed. In this case, the work, a connecting rod C, is held in a jiging fixture G, and the drill, reamer or other tool T, is placed in its socket S, first, the right size for the crankpin end, as shown at A, and second for the piston pin end as shown at B. The jig G is free to slide around on the platen, so that the work to be manipulated will swing end for end by turning the jig around, and the substitution of one tool T for the other of proper selection enables the workman to do two jobs per setting, and the accuracy of the work is up to the tool and the jig rather than dependent upon the workman. In the factory the connecting rods for this work go to a six-spindle press. The first two are rough cutters, the next two are second roughing cutters, and the third two have finishing cutters. Changes may be made at will.

Multiple-Spindle Work

JIGS and fixtures are of advantage in other and more extended ways; when it is desired to do several operations at one time, as in Fig. 7, a multiple-spindle drill, with eight spindles, 1, 2, 3, 4, 5, 6, 7, 8, driven from the same number of universal shafts, is so directed, due to the use of a jig J, that the tools, as reamers, drills or wing-cutters, T, etc., are directed into the work through the bushed holes, and since the bushings are of the right size and hardened, it will be impossible to make a mistake and drill or ream the holes in the work too large. If a hole is not large enough, the inspector will catch it, and such a trouble can be coped with without having to junk the work. The method, according to this reasoning, is not only likely to result in accurate work in almost every instance, but it is a saving process, since the inaccuracy, if some tool is in bad repair, may be corrected and the part may be saved, but it will not be at the expense of interchangeability.

Fig. 8 shows the Marmon crankcase, of aluminum, being reamed for eight valve-tappet guides, and the multiple-spindle drill, with its eight spindles, accommodates as many tools, and the holes are accurately located in the jig G with eight hardened bushings, 1, 2, 3, 4, 5, 6, 7, 8, all taking but a moment's time, and the accuracy is that of the jig maker and the expert in the tool-room where the drills and reamers are sharpened and kept up to the standard of accuracy desired.

The fixture shown in Figs. 7 and 8 is used for drilling the eight holes for the valve tappet guides and eighteen holes in the top of the crankcase, there being the usual hardened steel bushing for each hole that has to be drilled. The locating bar, one end of which is shown, has two locating points turned in it on which the slots at bottom of the legs of the drill fixture fit exactly, bringing the plate down on the finished surface of the crankcase. It is then in position for the operation of the drill.

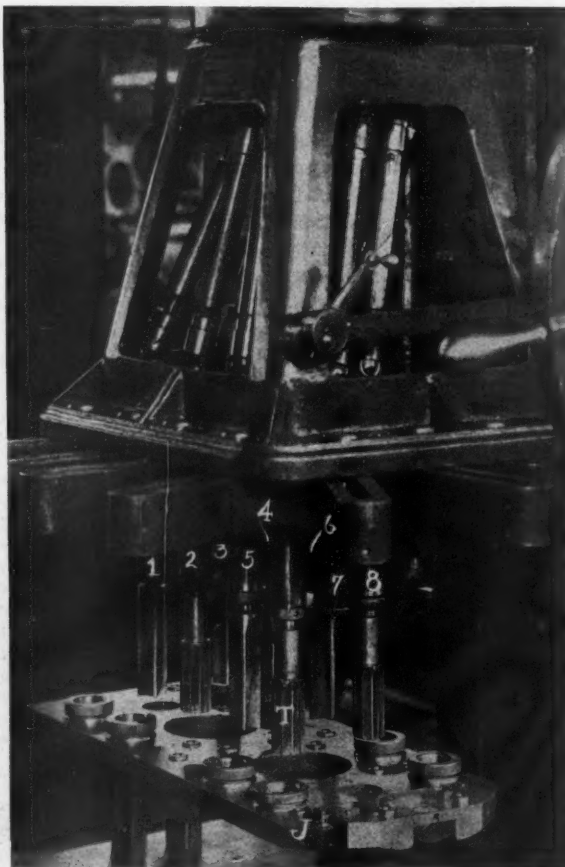


FIG. 7—MULTIPLE-SPINDLE DRILL WITH EIGHT SPINDLES

NO. 3 milling machines, mostly full universal, are now much in vogue, and this is a condition which has been brought about by motor car manufacturers, who, desiring to take advantage of the fine qualities residing in alloy steel, know full well that tungsten steel cutting tools will have to be used, and if the feed as well as the speed of cutting is to be noteworthy the milling machines will have to be massive and strong, with machined steel gears in the drive, and other parts to match. Makers of machine tools, keeping abreast of the time, also fell into the idea, but in spite of all that has been done along this line it is wise to use the heavier types of milling machines, and in many cases full universal, in order to increase the rate of production. Fig. 9 represents one of the uses to which Marmon puts milling machines, and the straddle mills, M1, M2 and M3, are of the class with inserted cutters of alloy steel, and the mandrel is much heavier than was the earlier practice. The work, in this case, is a connecting rod C, in a fixture F, bolted to the plated P, facing off the ends of the piston pin enlargement E, after which the same mills will be set to face off the ends of the crankpin enlargement E at the opposite end of the connecting rod. The work is lubricated from lubricant held in a can K, and runs down through the tubes to the cutting edges. The cutters rotate with the mandrel, being keyed on, and the work is fed to the cutters by the feeding mechanism attached to the platen. The mandrel is supported by an outboard bearing, from the arm, of large diameter. One pair of cutters is spaced at 2 1/16 inches for one end of the connecting rod and the other spaced at 2 1/4 inches for the other end of the connecting rod.

As an indication of the extent to which special tools may be contrived, for the dual purpose of improving quality and increasing output, Fig. 10 is offered, in which parting is done by means of a gang of saws S, keyed on to a mandrel, and in this instance the parting is done spirally. The work W is clamped on a second mandrel, and is given rotative motion against the rotation of the saws by means of the gear W1, which meshes with a

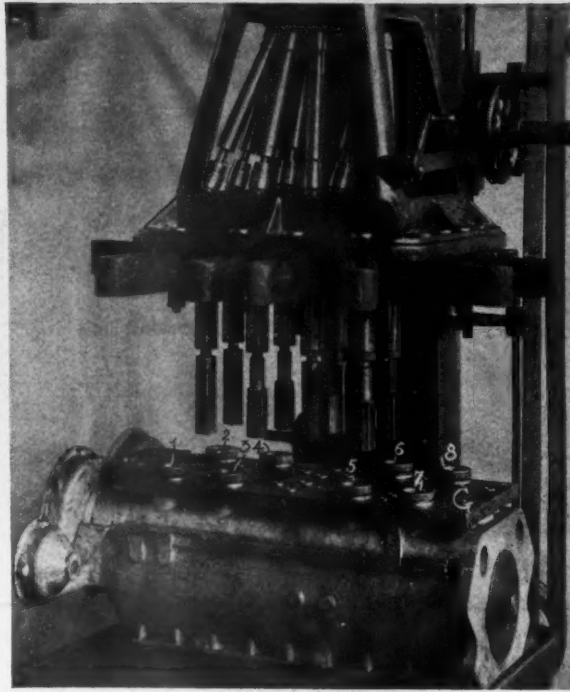


FIG. 8—MULTIPLE-SPINDLE DRILL ON A CRANKCASE

The Milling Machine

worm. The spiral motion is also imparted to the cutters by means of a worm W2, and the fixture F carries the outboard bearing B, which supports the mandrel for the work. This principal, as is applied to this milling machine, can be used for a number of jobs. The work shown is cutting piston rings, there being eighteen cut at once from the metal sleeve which is fitted to the expanding arbor and held thereby. The series of spaced saws S perform the entire task of cutting the group of rings at one time. In a plant of this character it is necessary to have a well-equipped toolroom, with men who are capable of making jigs, fixtures, special cutters, and other facilities. If accuracy is to be the product of automatic means, this same desirable germ will be killed off if the tools are not kept up.

In the maintenance of the tools, in order that they will assume all the responsibility for accuracy, they must be sharpened, sized, and kept in a good state of repair by toolmakers who are accustomed to this exacting work, but, in order to be

sure that they will act in concert, they too will have to be under the restraint which comes from having but a single method available for the consummation of a given task.

There is just as much need of inspection of the tools after they are sharpened and overhauled as there is in inspecting the parts which go into a motor car, and it is fatal to accuracy to disregard this point. In the Marmon plant, in order to cover this situation adequately, the tools are placed in the care of a foreman toolmaker of long service and proven skill, it being recognized that a tool, as a fixed cutter, if it is not to size, will be the instrument of inaccuracy in the hands of the artisan, nor will his skill, or lack of it, thwart the process. The dictum, then, in the Marmon is, compel the toolroom to foreshadow accuracy by practicing it. This is one feature of accuracy in car construction that does not receive its due quota of attention in many factories. If the tool is too large or too small how can the work be accurate, no matter how skilled the workman into whose hands the tool may fall or how accurate the machine.

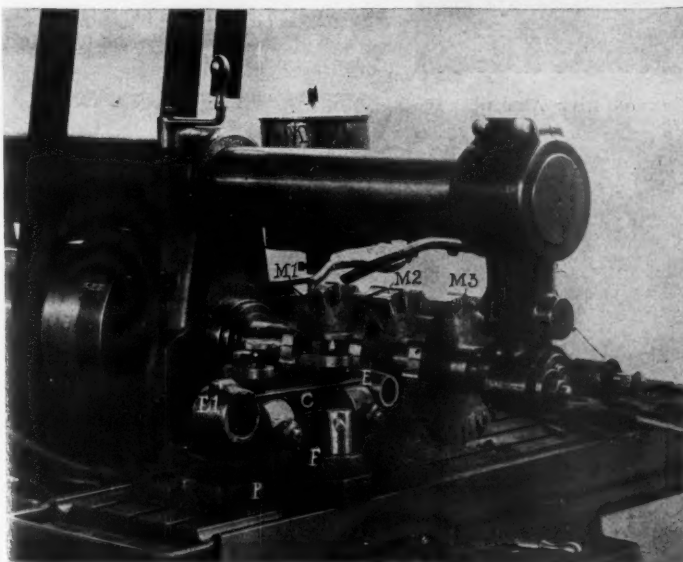


FIG. 9—STRADDLE MILLS IN A MILLING MACHINE ON CONNECTING RODS

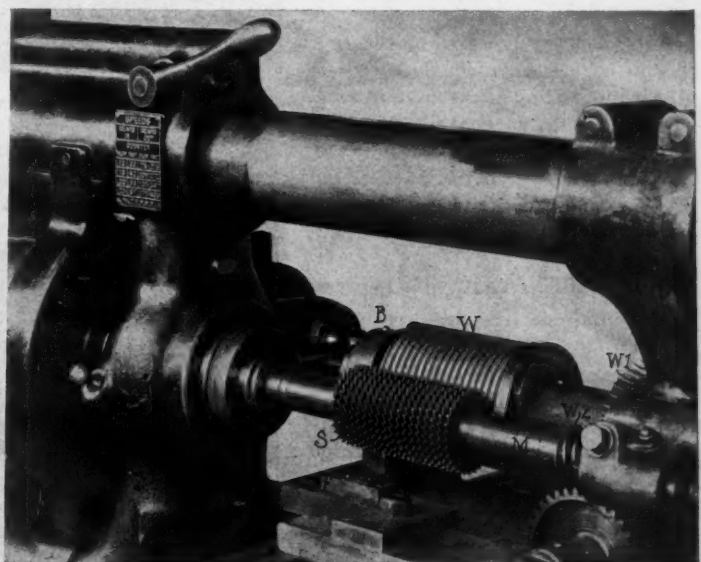


FIG. 10—GANGSAW, IN A SPECIAL JIG, FITTED TO A MILLING

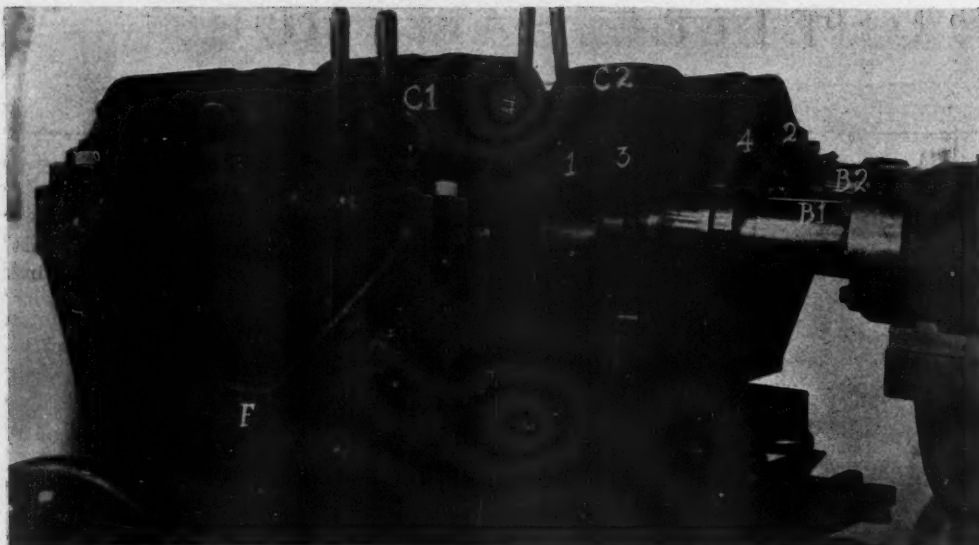


FIG. 11—TWO-SPINDLE HEAD GRINDER WORKING ON FOUR TWIN CYLINDERS

Cylinder Boring Head

IN cylinder boring, owing to the design of cylinders, a through bar can not be used, and Figs. 11 and 13 show how accurate work is done under such difficult conditions. The speed problem is adequately coped with at the same time, and a multiple-bar cylinder boring mill is the result. In this case two pairs of cylinders, C1 and C2, are clamped into a cradle-like fixture F, and the boring bars, B1 and B2, holding cutter-heads, tool out bore cylinders 1 and 2 at the first operation, leaving 3 and 4 for a second operation. The bores in each pair of cylinders, being so close to each other, prevent using a four spindle bar, and the work is shifted on the platen, running in guides G the required distance, when the second boring operation is to be performed. The boring bars, B1 and B2, being almost the diameter of the cylinders, are so rigid that they do not deform; this condition is further induced by using cutter heads rather than wing-cutters, and the pressure of the cutters in each case is equally disposed all around. The bars revolve in long sleeve bearings in housings H, positively driven at the right speed by the meshing gears G with the driving pinion, which in turn takes its power from the relating shaft.

Rear Axle Job

THE Marmon live rear axle housing, like all live axle designs, makes up for the difficulties involved in machining by the service rendered. The difficulties involved, however, call for a fine display of tool-maker's talent, and Fig. 12 shows how Marmon tool-makers solved the problem. In this case the drilling work, which is done after the turning is completed, is

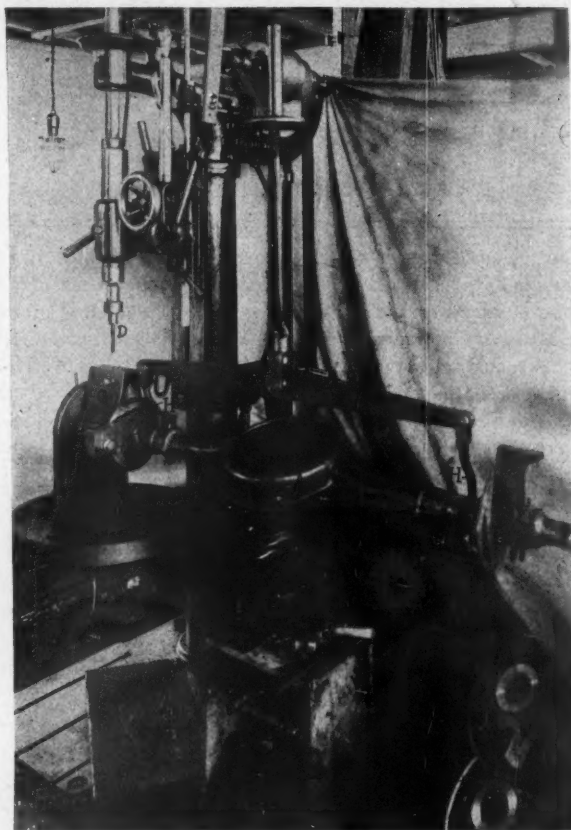


FIG. 12—FOR WORK ON LIVE AXLES

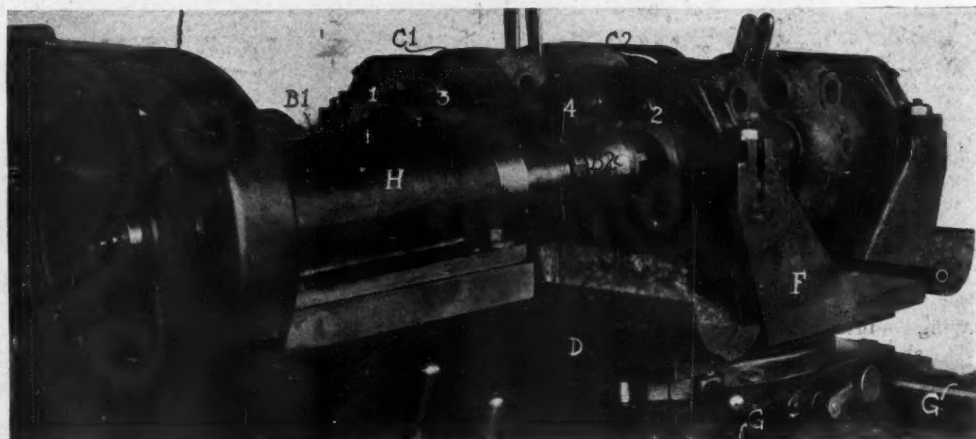


FIG. 13—TWIN-BORING BAR FITTED WITH A TURN-TABLE FOR BORING CYLINDERS

done in a sensitive drill aided by a jig and a balanced fixture. The jig G is fitted over the round of the axle end, and the axle A is supported by hooks H, reaching down from the balancing arm B, which is suspended from another arm. This fixture is more than human, and does the work that a helper to the machinist would scarcely accomplish because it is sensitive, constant and eliminates again the personal equation. When all is ready the drill D is guided into the jig hole, and the feed, at the right speed, is adjusted; the work is then accomplished with speed and accuracy. This fixture is universal since it is used for both ends—which are necessarily right and left.

Conclusion

IF this array of facts, depicting special tools and methods, spells anything at all, it does not substantiate the claims of the class of men who refer to every advance as "cheapening." To cheapen a thing is to reduce its cost without tampering with the quality. In every case, as here brought out, the quality has been advanced enormously, and if this better quality can be had at a lower cost so much the better. All efforts on the part of makers of automobiles, as they are directed in this age, have for a basis quantity production to be sure, but quality of production is enhanced simply because the methods employed are automatically accurate, and the men who direct the machines, instead of imparting varying degrees of skill, which is all that men have to offer, taking them collectively, become mere spectators while the machines do the work. True, the men have to be there, but only in the capacity of feeders, as it were, to displace the finished product by introducing work to be accomplished, and, in the event of the unexpected, add a dash of brains, a little ginger, and cover the emergency adequately.

STRAINS IN PROPELLERSHAFT HOUSINGS

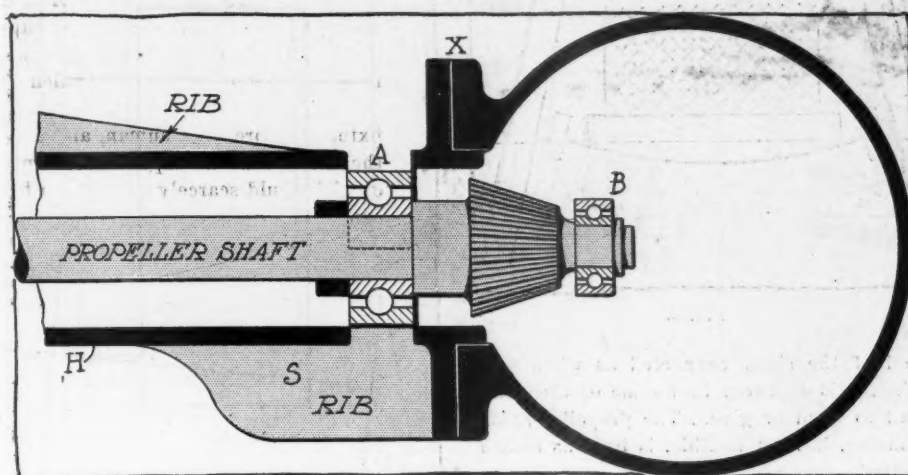


FIG. 1—DESIGN OF PROPELLER SHAFT HOUSING

IT WOULD seem at first thought that the designing of a propellershaft housing, Fig. 1, was as simple a problem as could be offered, yet, like many of the other easy problems, it offers food for thought if properly considered. That it has, on account of its apparent simplicity, been overlooked or neglected by some of the most prominent designers has been shown by the failures which can be either directly or indirectly charged to the part in question on several well-known makes of cars. In most cases, perhaps, the fault is not acknowledged by the manufacturers and the car owners or public in general never know but that the failure of which they happen to hear is an exceptional one and due to some unknown cause. In one instance, however, trouble at the point in question experienced upon a particularly well-known car, has been called attention to by an advertisement appearing in some of the recent periodicals and offering for sale a truss or reinforcement for use on this car "to seal up the differential housing so that grease will not leak out and to prevent vibration and chattering when the car is being driven on the low gear."

A discussion of some of the stresses which the shaft housing is called upon to withstand may not be amiss: Whenever a housing is provided for the propeller shaft, it is always counted on to take the torque strains. The maximum torque which the wheels can transmit is evidently found when they are just ready to slip. Assuming a coefficient for friction of .6—which may in special cases be exceeded—and that one-half the total weight of the car rests on the rear wheels, we find that for ordinary cases the torque may run as high as 750 foot-pounds for a 2,000-pound car having 20-inch wheels and 2,250 foot-pounds for a 5,000-pound car having 36-inch wheels.

It should be remembered that this torque is independent of the motor horsepower since the latter only determines the torque available for driving the car. Some might try to argue that, if the

By M. R. Wells

emergency brakes were thrown on hard enough to slip the wheels and the clutch not released, the torque of the motor would be added to that due to the slipping of the wheels. A little thought will

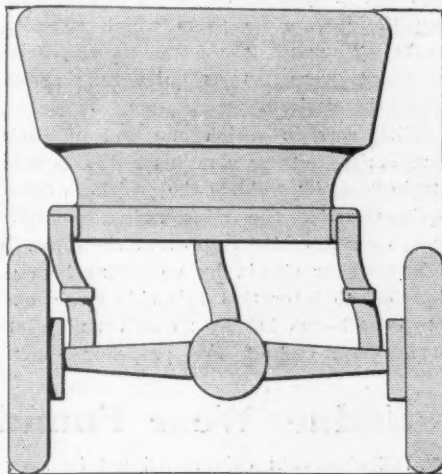


FIG. 2—BODY AND FRAME THROWN ONE SIDE

show that although the motor torque throws an additional twisting and bending stress upon the rear axle parts, it does not materially increase the stresses

in the propeller shaft housing provided the rear bearing is, as usual, located at practically the same point as the small bevel gear, thus bringing the action—force between the gears tending to move the propeller shaft up or down—and reaction—the force acting between the shaft and bearing at the rear end and opposing the first mentioned force—at practically the same point. It is true, however, that considerable shearing stress is thereby thrown on the joint between the propeller shaft and rear axle housings. The bending stress or moment acting on the propeller shaft housing in a vertical plane, varies from 0 at the forward end or support to a maximum at the point where it crosses the axis of the rear axle and at the latter point equals the torque of both wheels combined. From this it will be seen that the greatest strain is at the the rear axle housing. See X, Fig. 1. Consequently particular care should be taken to see that the joint is able to withstand the strain.

In the case of the car for which the reinforcement is advertised it is evident that the joint is the weak point, the flange being of small diameter and the connecting studs apparently unable to prevent the joint from springing open. Lack of a rigid connection at this point would naturally throw the bevel gears out of proper alignment, hence the "vibration and chattering when the car is being driven on the low gear" where the driving torque is usually greatest, according to observation.

In another case which the writer recalls, the shaft housing H was a one-piece malleable iron casting. On the upper side ribs were cast, extending from the front end almost to the back, the height gradually dropping to nothing at the rear. Short ribs S were also cast on the under side at the rear. The rear end of the shaft was supported by two annular ball bearings, a small one B being at the extreme rear end and supported in the axle housing while a much heavier one A was placed just ahead of the bevel pinion and

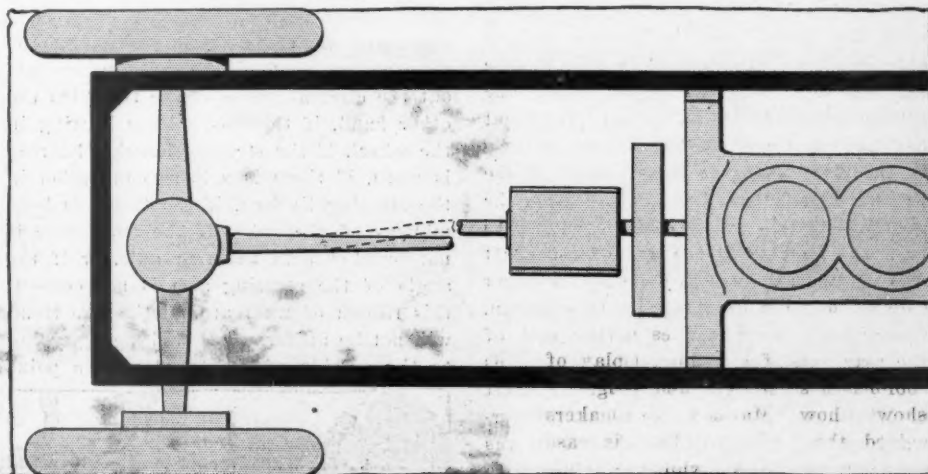


FIG. 3—CONFINING AXLE AND PROPELLER SHAFT TO SIDE POSITION

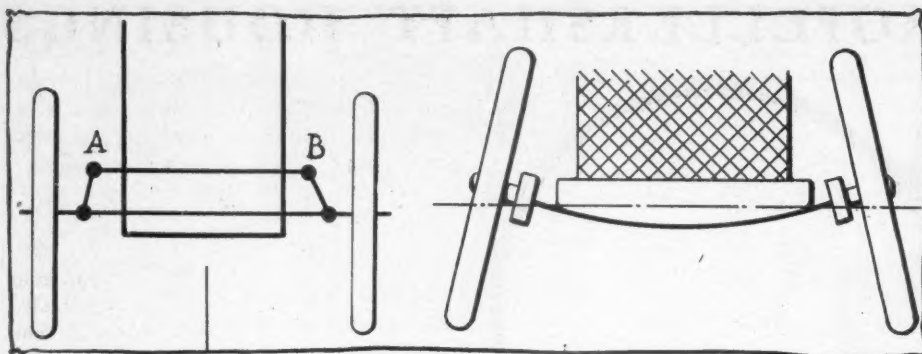


FIG. 4

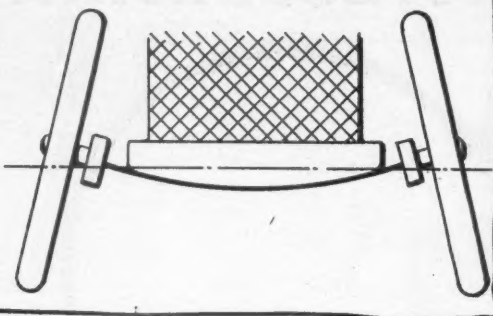


FIG. 5

held in the propeller shaft tube or housing. The housing was cut half way through at this bearing as shown, in order to accommodate a semicircular clamp holding the outer race of the bearing.

Consideration of this design will show that exceptional rigidity was provided for the greater part of the tube's length but just at the very point where the bending stress was greatest the tube was cut half in two. This was almost the same as making a deep scratch in a strip of glass and then trying to bend it. Remembering that in driving ahead, the driving torque tends to lift the propeller shaft and housing, one was not surprised at the result upon several cars. The housing apparently sprung enough to throw onto the smaller rear bearing a strain which was greater than it could stand and it consequently went to pieces. The rear end of the propeller shaft and gear continued going up until the differential housing had consented to their freedom. Even though such a design might withstand the driving strains for some time, one would expect the vibration to cause a crack and ultimately a break at the notch referred to.

In general, it may be said that the torque stresses are usually pretty well considered and provided for, but there is a stress existing in several of the later models which does not seem to have been considered by some. Reference is made to the crosswise bending action or tendency to pull the forward end of the propeller shaft to one side or the other when the car turns a corner at considerable speed. In this case, the body, together with the frame, will be thrown to one side as shown exaggerated in Fig. 2. The amount will depend largely upon the spring suspension. With one prominent car having three-quarter elliptic springs in the rear, when the forward end of the propeller shaft was disconnected from the gearbox, it was not a difficult matter to rock the body until the end of the shaft was thrown as much as 6 inches to either side of the center line. In this design, fore-and-aft movement of either end of the rear axle was prevented by the radius rods, hence the axle and propeller shaft could not swing as a whole about the forward end of the propeller shaft but was confined to the side position similar to that shown in Fig. 3. With the forward

end of the shaft connected as when running, it is apparent that some of the parts had to bend or give. The propeller shaft housing, if most flexible, is bent as shown dotted.

In one case, called to the writer's attention, the steel tube which formed the housing, was permanently bent so far to one side that it was with difficulty that the shaft was removed from the housing when attempting to straighten the latter. In this particular instance, the propeller shaft had only one bearing at either end, the rear one very close to the bevel pinion, and in spite of this bend in the housing there were no parts which actually broke. However, the gears, as would be expected, were not as quiet running as might be desired.

With cars in which one end of each rear spring acts as a radius rod, this side strain sometimes shifts the position of the springs under the clips unless positive means are provided to prevent the same.

The writer should by no means be understood to infer that this side strain exists on all cars having no universal joint at the rear end of the propeller shaft.

Undue Wear Found on Pneumatic Tires

THE observant driver will not be slow to notice that on some cars the wear on the tires comes directly on the center of the tread, and that if the wheel be jacked up and rotated there will be a uniform ring around the tread showing the area of wear. If the front and rear axles are in perfect alignment with each other and with the frame, the ribbon of wear on the tread will be uniform throughout the circumference of the tire. On the other hand, if there is a loose bearing in the wheel, if the steering knuckle bearing is worn, if there is a loose connection in the steering linkage, if the frame is bent midway of the axles, if the front axle is not parallel with the rear axle, or if the angle of the steering arm is not correct, this ribbon of wear around the tire tread will not be uniform, but will zigzag, going to the outside of the tread at one point

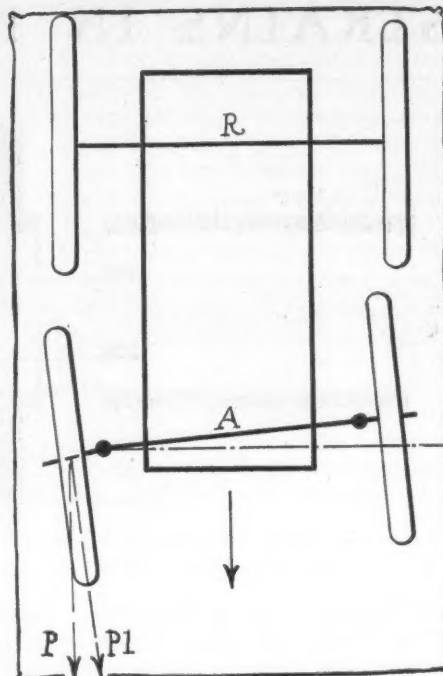


FIG. 6

With cars on which the driving force is transmitted through the propeller shaft housing, the ends of the rear axle tubes are often braced with stay rods running toward the forward end of the propeller shaft tube. With such an arrangement, it is evident that side radius rods are done away with and the entire rear axle construction is free to swing about the front universal joint except for the side resistance offered by the springs.

In addition to the above stresses, there are others such as are due to vibration, propelling forces, etc., but these are usually so well provided for that they will not be discussed here.

and coming to the inside of it at another. No matter which of the above enumerations fits the case the result which concerns the driver most is the undue wear. An analysis of this situation has been given in a recent issue of *Omnia*, which has summed up the situation on many of these cases.

The situation as outlined shows the many possibilities of undue wear and answers the question why at one season of the year a certain make of tire gives excellent service, whereas towards the end of the same year these tires give much poorer service. In the majority of cases the tires are blamed, whereas they should not, the fault being in the mechanical alignment of the car parts. It frequently happens that concerns change the wheel-bases of cars without redesigning the steering arrangements. This invariably results in excessive tire wear. A few examples will suffice to illustrate this: In Fig. 4 the distance rod AB is the culprit. A careful inspection of the drag link and steering connections was made to see if

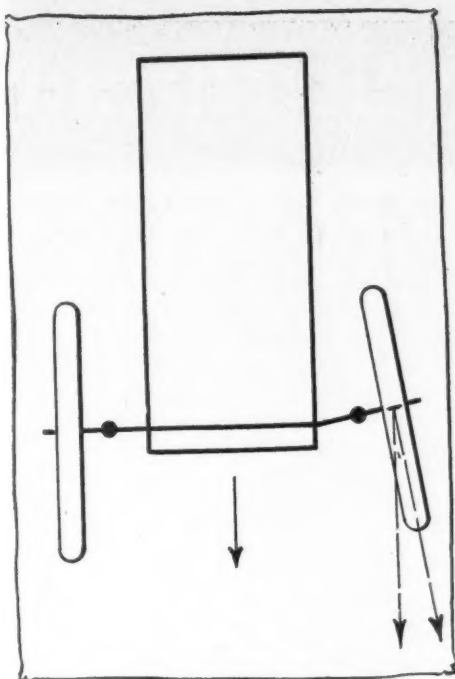


FIG. 7

they were in good working order, and to note if the steering arm and the A end of the axle is the same as that at the B end.

In Fig. 6 the front axle A is out of parallel with the rear axle R, in which condition the tires have a tendency to wear irregularly. The line of direction is P, whereas the actual line of propulsion is P1. Because of this variance, which is perhaps due to the axle having slipped on the spring at one side, there is excessive wear. In Fig. 5, one of the tires will wear more readily than the other, owing to an imperfection in the steering knuckle or a bend in the spring seating. The troubles in this case are identical with those in Fig. 6.

Fig. 7 illustrates a weak front axle condition, in which the wear on both front tires will be enormous. Cars with front wheels spread in this manner are frequently seen and the loss due to excessive tire wear will soon prove more than the cost of a temporary repair.

The offenses illustrated in Figs. 8, 9 and 10 are similar, and are due to wear in the steering parts. It is good practice to take hold of each front wheel and try to shake

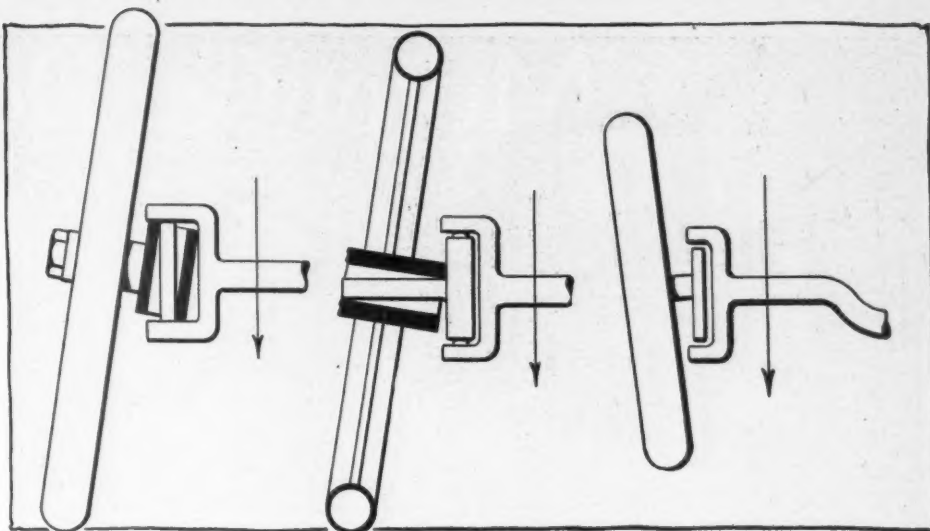


FIG. 8

FIG. 9

FIG. 10

it in and out to note if the bearings are tight. It is a very innocent looking trouble to watch a car coming toward you on the boulevard with one of the front wheels wobbling slightly, but the excess tire bill, which invariably accompanies such, is a much different proposition. Figs. 8, 9 and 10 illustrate conditions which are purposely exaggerated, in order to make the condition clearer, but these conditions are grave factors nevertheless.

The tire trouble is not, however, always confined to the front wheels. The rear wheels are often offenders. Fig. 11 is an example of where a careful examination of the tension of the driving chains will greatly reduce the tire wear. In this illustration the rear axle is out of align-

ment with the front axle, and the trouble can be rectified by correcting the radius rods.

Undue tire wear often occurs on cars equipped with live rear axles, Fig. 12. This is generally due to loosening of the bearings, or a general sagging of the axle. Fig. 13 illustrates exactly how this occurs, although exaggerated. If the end of the axle driveshaft is bent, the rotation of this shaft, instead of being in the plane AD it will describe a cone BOC, with the result that there will be a sinuous ribbon of wear on the tread of the tire. Cases of this kind have been numerous in certain makes of cars where the rear axle construction is weak and which have been noted by the writer.

Cactus Fiber for Brake Lining Tested

EXPERIMENTS made by Luther Burbank to utilize the fiber of the common cactus which overgrows entire sections of some of the western states in the production of cloth, promise to find a most practical application in the field of motor car brake construction. During the past year J. D. Maxwell has tested various brake-lining materials and he now states that cactus fiber is not only the equal of asbestos but possesses a number of qualities which makes it highly desirable for the new purpose. In the recent experiments of Mr.

Maxwell it was shown that while a Maxwell touring car travels some 600 feet before it gathers full headway from a standstill, it is brought to a dead stop within 75 feet when the brakes are applied with full force. Though no definite information is given in regard to the process by which the new material is made, it is stated that the braking and wearing value of the various materials tested rank as follows: Cactus fiber, asbestos, cork, red fiber, camel's hair, hickory blocks boiled in oil, hickory blocks dry, cast iron.

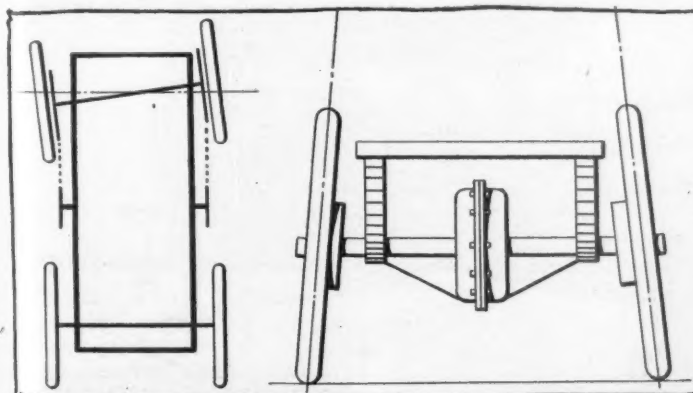


FIG. 11

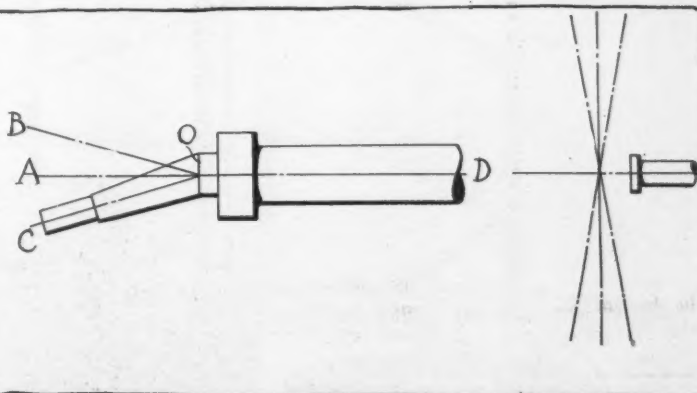


FIG. 12

FIG. 13

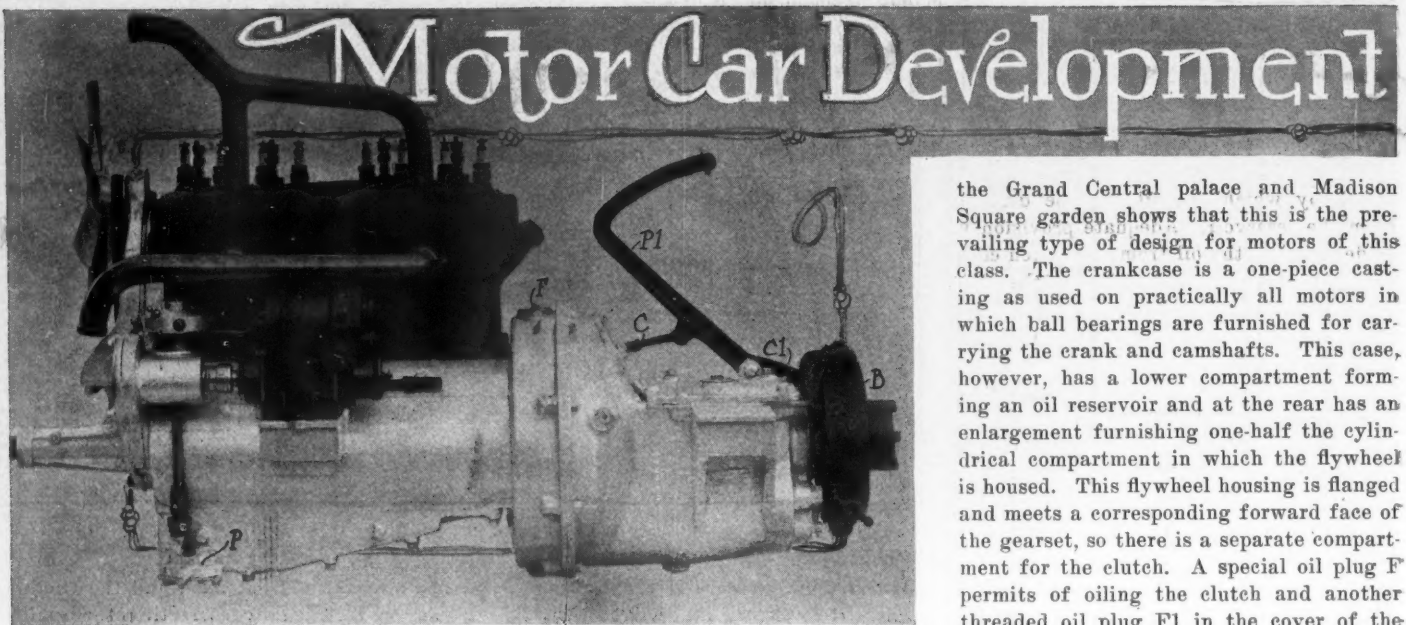


FIG. 1—THE HERRESHOFF UNIT POWER-PLANT FOR 1910

THE Herreshoff car for 1910 is a two-unit construction. Some cars of today are of the three-unit type, but the two-unit design gradually is increasing in popularity, particularly in the medium-priced field. Figs. 1 and 3 show one of the units of the Herreshoff, this unit comprising the motor, the multiple-disk clutch, the selective gearset, and the service brake B located on the rear of the gearset. Fig. 5, on another page, illustrates the second unit, consisting as it does of the rear axle, a torsion tube T with two brace rods R, and a ball-and-socket joint, the ball B of which is supported in socket parts S carried on the cross-member F of the frame. Between these two units one and two of the Herreshoff is the one universal joint of the system, located as it is within the ball joint B, the regular propellershaft being inclosed in the torsion tube T.

Solving Problem of Alignment

The object of this two-unit construction on the Herreshoff, as well as on other cars, is that the problem of alignment may be

readily solved. Where the motor is a unit by itself, the gearset another unit, and the rear axle a third, all three must be kept in proper alignment if the car efficiency is to be maintained, and forming the gearset a unit with the motor eliminates one of the universal joints and cuts the problem of alignment in half.

The unit power plant of the Herreshoff in many respects bears a striking resemblance to some others of the unit type. It is a ball-bearing outfit, however, the crankshaft being carried on three races of ball bearings, the one camshaft rotating on bearings of this type, and this type of bearing also being used in the gearset. Casting the cylinders in pairs is a characteristic of it, the measurement of these cylinders being $3\frac{3}{8}$ -inch bore and $3\frac{3}{4}$ -inch stroke. Each twin casting is of the conventional L type, having intake and exhaust valves in an offset chamber on the right side.

Readers of Motor Age will recall from the recent analysis of motors exhibited at

the Grand Central palace and Madison Square garden shows that this is the prevailing type of design for motors of this class. The crankcase is a one-piece casting as used on practically all motors in which ball bearings are furnished for carrying the crank and camshafts. This case, however, has a lower compartment forming an oil reservoir and at the rear has an enlargement furnishing one-half the cylindrical compartment in which the flywheel is housed. This flywheel housing is flanged and meets a corresponding forward face of the gearset, so there is a separate compartment for the clutch. A special oil plug F permits of oiling the clutch and another threaded oil plug F1 in the cover of the gearbox provides handy oiling facilities for it.

Circulating System of Lubrication

The motor lubrication is through a circulating system, an oil pump P, Fig. 1, being located outside of the oil reservoir at the left front. This pump is located on the lower end of the timershaft which shaft is driven by spiral gears from the magneto-shaft, giving a compact and accessible driving scheme. The circulating system is a conventional one, the oil being forced through copper tubes to sight feeds on the dash, whence it flows by gravity to the front and rear compartments of the crankcase, it not being deemed necessary to feed the oil to the crankshaft bearings because of their being annular balls. In each compartment of the crankcase is maintained an oil level of sufficient height to furnish the splash for the connecting rods bearings, wristpin bearings, cylinder wall and piston rings. Once the oil level reaches a predetermined height it overflows into the reservoir. As Fig. 3 indicates, two drain cocks are furnished, 1 by which the oil level in the reservoir may be determined.

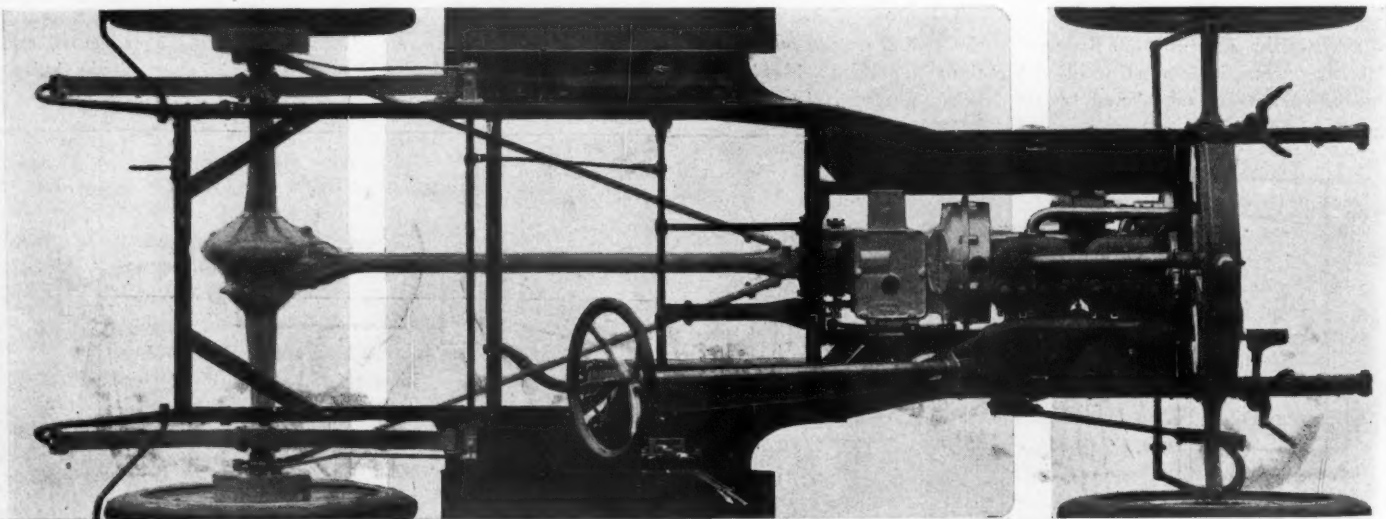


FIG. 2—TOP VIEW OF HERRESHOFF CHASSIS SHOWING BOTTLE-NECK FRAME

The New 1910 Herreshoff

and 2 by which the oil may be drained from the reservoir. Adequate provision is made to drain the oil from the clutch compartment through the plug D in the base and also from the gearbox by a similar threaded plug D1. A filler on the right front motor arm, Fig. 3, affords easy access to the oil reservoir in the crankcase.

Double Ignition Set Fitted

Somewhat out of the ordinary in cars of the Herreshoff type is the fitting of a complete set of double ignition, there being two sets of plugs. One system is the Bosch high-tension magneto, characterized by fixed spark control. The magneto is placed on the motor arm at the left and is most accessible, being held thereon by the usual metal strap. It is entirely free from the exhaust or intake manifolds, both of which are carried on the right side. The other ignition system is a storage battery, a four-unit coil, a timer,—seen at the left front, Fig. 1—and a separate set of plugs already referred to. The four-unit coil in this system is carried on the dash.

The Herreshoff is another example of thermo-syphon cooling, this system gaining considerably during the last few years on medium-priced cars. The intake and return water pipes, seen in Fig. 1, are drawn brass tubes of reasonable diameter, although not of that large diameter which is used on some thermo-syphon types. The radiator is a vertical tube design, and back of it is a six-bladed fan mounted on ball bearings and driven by a V-section belt from a large pulley on the end of the camshaft. The fan is supported on a metal bracket mounted on the front cover of the timing gear housing, and by an eccentric method of mounting the carrier for the ball bearing it is possible to keep the belt in tension as required.

The multiple-disk clutch is of the steel-

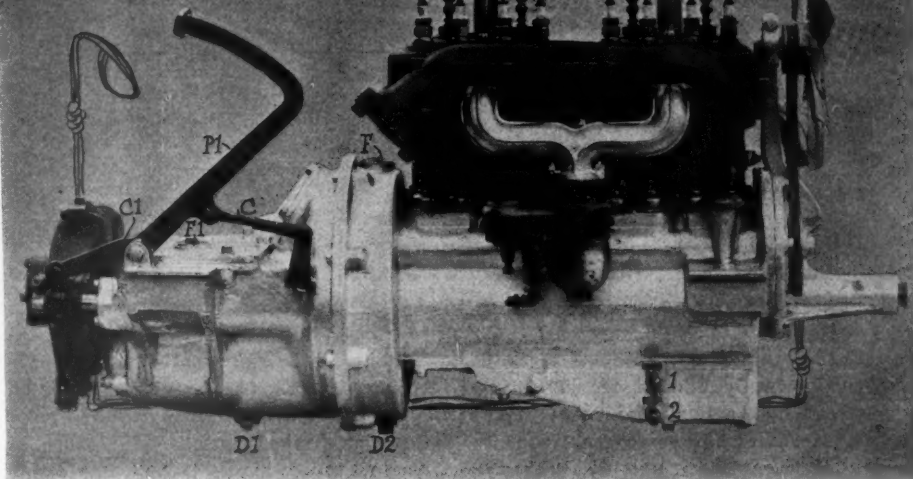


FIG. 3—VALVE SIDE OF HERRESHOFF MOTOR

to-steel type, the driving set of disks attaching by their notched peripheries to the flywheel and the driven set attaching through their notched hubs to a spider carried on a hexagonal shaft which connects with the gearset. Engagement of the clutch is through four coil springs regularly spaced in the clutch circle, and exerting their pressure on the disks midway of their outer and inner edges. The control of the clutch is through the pedal P and the connection C, the first depression of the pedal disengaging the clutch, and a further depression through the extension C1 operates the service brakes B. By mounting the pedal on the top of the gearbox it becomes a unit with the power plant and so any difficulties that might be caused by misalignment between the power plant and the are eliminated.

Selective Gearset Construction

The selective gearset is a nickel-steel construction, the gears and shafts heat-treated and the face of the gears increased in width for added strength. The

gearbox, like the crankcase, is a tubular construction of cast aluminum well ribbed circumferentially to give the needed strength. As previously stated, imported annular ball bearings are used for carrying both shafts. Control of the gears is through a side lever, working in an H quadrant, the usual locking device being provided to prevent the possibility of meshing more than one train of gears at the same time. Fig. 6 shows the top view of the gearbox with the cover removed, and disclosing as it does the two shifter yokes for operating the sliding gear units on the mainshaft. The forward sliding unit gives direct drive through an internal and external gear mesh. The mainshaft of the case carries several integral keys instead of being squared or formed otherwise. Inclosing all of the shifting parts within the gearbox makes the lubrication a simple matter. The ends of the gears are suitably rounded to avoid grating when changing speeds.

The triangular system of drive on the

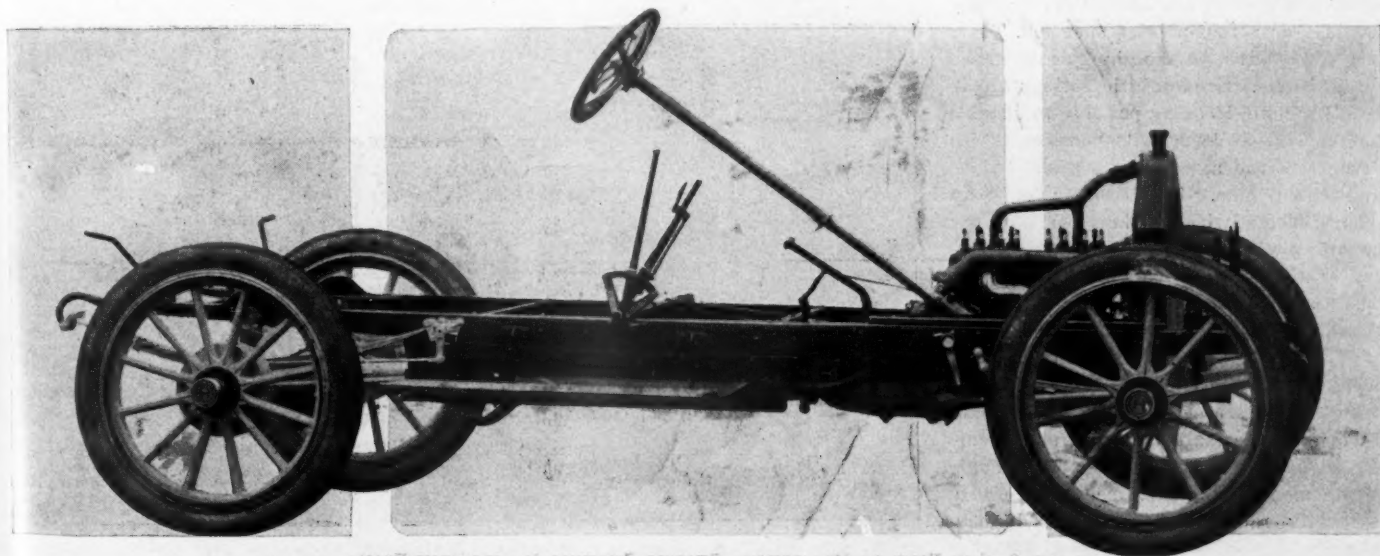


FIG. 4—HERRESHOFF 1910 CHASSIS WITH MOTOR COOLED BY THERMO-SYPHON CIRCULATION

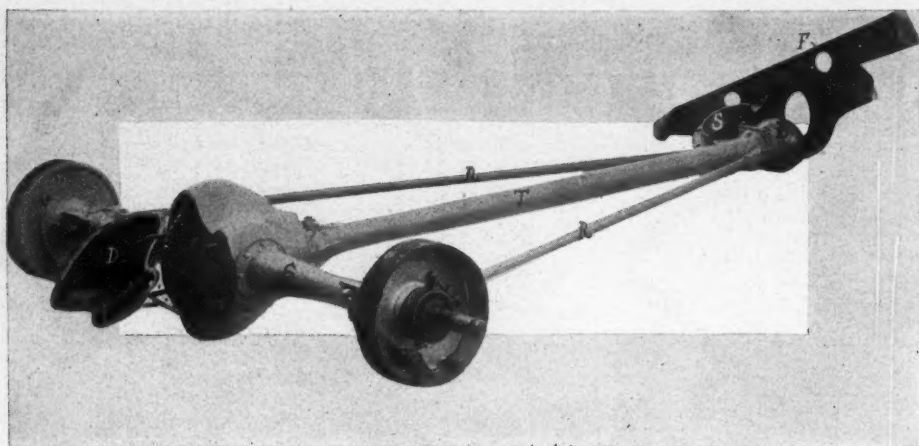


FIG. 5—TRIANGULAR DRIVE SYSTEM ON HERRESHOFF

Herreshoff appears in Fig. 5, and already has been generally alluded to. The torsion tube T not only absorbs the torque of the rear axle, but serves to transmit the driving power of the axle to the frame of the car. The rear axle is a semi-floating construction with Timken bearings supporting all rotating parts. Referring more particularly to the axle housing, which has the differential gear cover D removed to show the demountability of the differential, the housing itself is a malleable iron casting and the axle tubes S are tapered and riveted to the housing at the inner end. At the outer end of these tubes the brake spiders are pinned and brazed into position. Although not illustrated, a truss rod is provided on this axle. Both drive-shafts of the axle are heat-treated steel, with the ends fitting in the differential hexagonal instead of square and the outer ends which take the wheel hubs are tapered and the hubs are secured by castellated nuts. Provisions are made so that the gears may be adjusted in order to maintain their alignment.

Running Gear Is Illustrated

The Herreshoff running gear is illustrated in Fig. 2, which shows the frame to be of the bottle-neck type, with the flanges on the side of the motor extra wide where the offset at the dash occurs. The unit motor and gearset are carried on subframe members on a four-point suspension. There is a slight arch in the side pieces above the rear axle. Semi-elliptic springs are in use all around, it being possible to shackle the rear set at both ends because of the drive from the axle being transmitted to the torsion tube. The front axle is an I-beam design with Timken bearings for the front wheels. Placing the tie-rod in rear of the axle protects it from all obstructions, and the fore-and-aft link from the radius rod of the steering gear to the right steering knuckle is carried above the axle so as to be out of harm's way. The worm-and-sector steering gear is located between the main and subframe members so that the sectorshaft passes through the side member of the frame. The column is heavily raked and carries a 16-inch wheel.

Braking is somewhat out of the ordinary in this car, in that the service brake is on the propellershaft at the rear of the gear-set, which brake drum is 6½ inches in diameter and 2 inches wide. This diameter may appear small to some, but it must be remembered that this drum rotates four times as fast as do the rear wheels, a fact which brings this brake up to the standard of the rear wheel brakes which are 10-inch drums with 2½-inch width. The rear brakes are of the expanding type, lever-applied, and the expanding shoes are faced with a copper-asbestos fabric.

An option is afforded of three types of bodies—five-passenger touring car, four-passenger tourabout, and three-passenger runabout. The regular chassis equipment is 32-inch by 3½-inch Michelin flat-tread tires on Goodyear quick-detachable rims. A tire option is given, however.

MOTOR CAR LITERATURE

"Story of the 1909 Glidden Tour and the Moline's Perfect Score" is the title of a day-by-day story of this annual pilgrimage for the first time over western territory. The value of this little book is enhanced by a short resume on the object and value of the Glidden tour, a synopsis of the rules, etc. Incorporated at the back of the book is the 1910 announcement of the Moline model M.

The all-star cast at the fifth annual banquet of the sales organization of the Maxwell-Briscoe Motor Co. is caricatured in a booklet which the Maxwell company is mailing to the trade.

The Pierce-Arrow Motor Car Co. has issued an attractive route book entitled "Route Suggestions for Pierce-Arrow Tourists." Like all other publicity from this concern it bears the usual Pierce-Arrow characteristics in makeup, style and quality.

An interesting 1910 catalog is that of the Chalmers-Detroit Motor Co., which features and illustrates in detail all the Chalmers models. The concern's lamp and windshield equipment also receive attention. A novel feature introduced in this catalog is the pocket arrangement on the inside of the back cover page which contains six colored illustrations of Chalmers models, with standard attachment for desk sets.

The catalog of Thomas B. Jeffery & Co. contains a beautiful colored frontispiece of the New Rambler 55, which is this company's leader for the 1910 season. Its other models are shown, as well as detailed illustrations of all the working parts. The usual description and specifications appear. This concern also is circulating a large folder entitled "The New Rambler for the Man on the Farm," the front cover page of which is a beautifully decorated colored drawing.

"From Ocean to Ocean" is a running story of the trip of the Mitchell Ranger which carried a transcontinental war dispatch from New York to San Francisco. The book is profusely illustrated by most interesting pictures.

The Continental Caoutchouc Co., New York, is mailing a circular to the trade calling attention to its ready-flated tires.

As a ready reference guide the Stevens-Duryea Co. has mailed to the trade a leather-bound booklet of specifications of its models, including line drawings of the bodies and chassis. Two pages are devoted to samples of the standard colors used on its models.

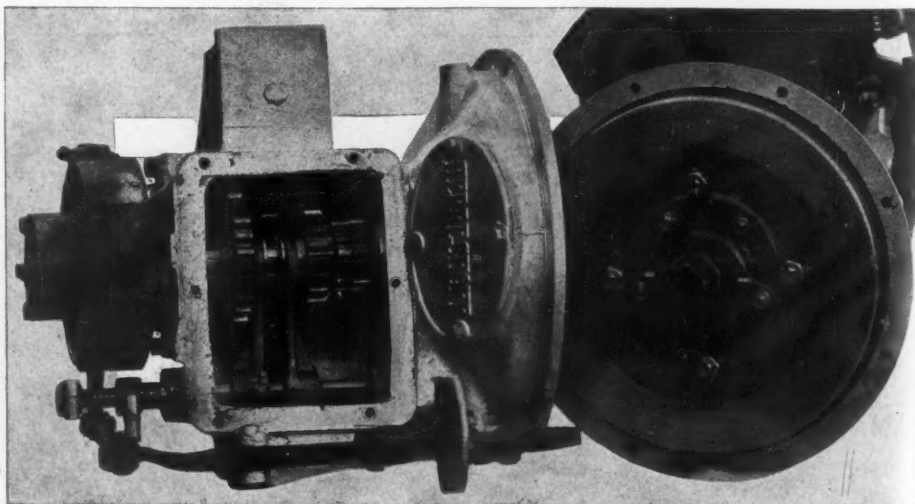


FIG. 6—TOP VIEW OF HERRESHOFF GEARSET AND CLUTCH



The Motor Car Repair Shop



PROBABLY one of the most harmful and destructive conditions which may exist or be brought about in a motor car is that of mis-alignment. The improper adjustment or fitting together of parts is the cause of more broken lugs, cracked motor, gear-set and bevel-gear cases, leaky radiators and general unsatisfactory service of a motor car than perhaps any other cause. It is mis-alignment of the front wheels, caused by mal-adjustment of the tie-rod that causes the tires on those wheels to wear with undue rapidity. It is mis-alignment, caused by worn bushings or lack of adjustment in the steering knuckles, which makes turning of the steering wheel a laborious task, requiring the use of both hands and some strength to turn a wheel on a car, which, when new, could be operated with two fingers. It is mis-alignment of the front wheels in their vertical planes, caused by the bending of a weak or overloaded front axle, which gives them that unsightly appearance, causes excessive wear in the wheel and steering-knuckle bearings, throws the tie-rod out of adjustment, and puts a constant side strain on the wheels, which tends to prematurely loosen up their spokes. The chances for mis-alignment in a motor itself, which may be brought about when overhauled and assembled by an inexperienced repairman, are too numerous to mention in this article. Mis-alignment between the clutch and the flywheel of the motor causes the clutch to drag, the gears to grind and the driver to swear when shifting; and when neglected often causes a tooth to break off, which jams in the gears, bends the shafts, or breaks the case, creating havoc within and without. Mis-alignment between the main and countershafts of a gear-case makes a transmission noisy. This condition has been brought about by a sudden severe twist of the frame to which the case is attached, which, although not enough to crack the case or break off an arm, distorts it so that it takes a permanent set with the shafts out of line. The most common causes for mis-alignment in a rear axle of the bevel-gear type are: mal-adjustment of the bevel pinion, which causes excessive wear if neglected, and lack of adjustment of the wheel bearings, which is destructive to the bearings themselves, and throws the brake surfaces out of line, rendering them inefficient.

A very simple and common case of mis-alignment is shown in Fig. 1. This represents a flange union on an exhaust pipe. In dis-assembling an exhaust pipe from the cylinders of a motor, it is generally most convenient to separate it at the coupling E; the part F then can be removed entirely, giving free access to the valves

Hints for the Amateur

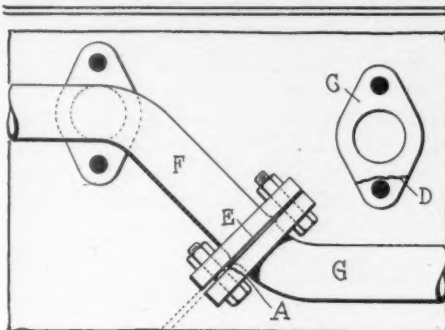


FIG. 1—RESULT OF MISALIGNMENT

or other parts. On re-assembling these parts, the portion F usually is the first to be attached, and then the part G connected. It often happens that owing to curves and attachments of the portion G, it is found difficult to make proper contact between the two flanges; or the lack of alignment may be due to the fact that the very thick copper-asbestos gasket has been forgotten, or vice versa, a thick gasket may be used when the coupling was originally fitted without one, or a very thick one used to replace a very thin one, etc. Any of the above causes may cost the young repairman much time and trouble before he is able to get the bolts into place. On a high-class car, where all such parts are carefully fitted, it might be impossible without damaging the threads of the bolts. If, after much labor, the joint finally is made, it will be in the shape illustrated in Fig. 1; when the motor is started up, a hissing sound at this point will indicate that the joint is not tight. The young repairman will knowingly place his hand near the joint and find that the bottom nut needs tightening. He stops the motor and proceeds to tighten the nut, and although it turns very hard this has no significance. He gives the nut one or two turns and starts the motor again; still it hisses, but not so loud as before. Again the motor is stopped. It is impossible to turn the nut further with the wrench previously used, so a larger one is employed. A strain is put on the nut and it is given about half a turn when crack! one of the lugs breaks off as designated by the irregular line A. This same condition may be brought about if one end of a gasket is folded; and a lug may be broken in the same manner if a gasket is used that has one of its ends broken off as shown by the dotted line D, on the gasket C.

Testing Compression

To test the compression of a motor, crank it over slowly and note the resistance, which should be the same in all cyl-

inders. Do not confuse the constant mechanical resistance with the stronger intermittent resistance of the compression. If the compression is particularly weak in any of the cylinders, inject a couple of tablespoonfuls of oil into the faulty cylinders, then try the compression again and note the effect. Improved compression may indicate: that the pistons are stuck in their grooves, and should be loosened up by injecting a gunful of a mixture of half kerosene and half alcohol into the cylinder while the piston is down and allowing it to soak around the rings; or, that the piston rings or cylinder walls are worn or scored and need the attention of an expert repairman. If there is no improvement when oil is injected into the faulty cylinders, look for worn, pitted, or sticking valves, insufficient space between the valve-stems and push-rods, or leaks around the spark plugs, igniter plugs, priming cocks, etc. Leaks may be tested for by running oil around the suspected parts, then cranking the motor over slowly; the leaks being exposed by the bubbling of the oil. Lack of improvement also may indicate that the piston-ring splits are in line; that piston rings are broken, or that the walls or heads are cracked.

A Cold Weather Experience

During a recent cold spell a motor was left in an unheated barn for several days. There was a non-freezing solution in the water system so notwithstanding the very low temperature there was no danger from this source. Having had trouble with the carbureter, a man was sent to the barn to replace it with another. This done, the motor was started and run for several minutes, when it stopped, apparently for lack of gasoline, as the tank was about empty. No further effort was made to start the motor that day, but on the following day when the owner tried to crank the motor, the crankshaft refused to budge. The pistons were tight in the cylinders. The car then was hooked on a motor truck and taken to a repair shop, where a copious amount of kerosene was injected into the cylinders and allowed to soak in around the pistons over night. In the morning the pistons were free, and the motor could be cranked. The cause for the trouble is ascribed to the effect of the cold on the lubrication system, which is of the circulating type with a long external lead from the crankcase to the oil reservoir. It is thought the oil in the lead or perhaps in the reservoir had become so thick that it failed to replenish the supply in the crankcase; this then became so low that the connecting rods did not dip deep enough to produce the necessary splash to lubricate the cylinder walls.



From the Four Winds



Japs Given Ride—A photograph recently taken in Kansas City, Mo., shows the Midland cars which were furnished the Commercial Club of that city by the Midland Motor Car Co. and which were used to convey the Japanese imperial industrial commission for a drive along the boulevards of Kansas City.

After a New Road—A new road from Bridal Veil Falls, Ore., to Cascade Locks, along the south bank of the Columbia river, is the project for which 260 Portland property owners petitioned the county court the past week, the petition being presented by the two good roads advocates, E. Henry Wemme and Lewis Russell. The estimated cost of this road is \$40,670. The total distance is 17.3 miles.

One Show For St. Louis—After a meeting which lasted 2 days in St. Louis and at which sixteen motor car concerns were represented, the proposition advanced several weeks ago for a rival show in the new Coliseum at the same time the regular show is held in the First Regiment armory in February was abandoned. The men at this meeting feared a second show might create a feeling which would injure the trade, although many expressed deep disappointment that they could not find floor space they felt was due them in the armory.

Drought After Members—Secretary James T. Drought, of the Wisconsin State Automobile Association, has started a membership campaign which is proving fruitful. The membership is \$2 for individuals and \$1 for members of motor clubs affiliating with the association. In line with the great activity in Wisconsin motor-dom, the club proposes to make 1910 a most progressive and pleasant one for its members. A state tour is being worked out. President M. C. Moore is still working to have the next Cobe trophy race run in Wisconsin and the association will fos-

ter the event. The good roads and guide-board campaigns are being pushed vigorously, with the co-operation of members in all parts of the state.

Another Savannah Run—It has been decided by the Savannah Automobile Club, of Savannah, Ga., to have its next endurance run which will be to Jacksonville, Fla., March 28-29. The Savannah News, the Jacksonville Automobile Club and a local paper there also will take part. The scout car, a Maxwell to be driven by Robert Brockett, Jr., will leave this week to pick out the route. The distance is something like 175 miles.

Portland Club Interested—It is found that the building of a road from Portland to Hood River devolves upon three parties—Multnomah county, Hood River and the Oregon Railway and Navigation Co. Hood River already has started its part of the work and has it well under way. The O. R. and N. is said to be willing to do its share of the work during the coming summer, and it is now only necessary to secure the co-operation of the county commissioners of Multnomah county to get the road built straight through. This is what is to be undertaken by the Portland Automobile Club.

Another New York Bill—In the New York state legislature at Albany, Assemblyman Dana has introduced a bill which requires that motor car operators are to be licensed; chauffeurs must pass an examination; machines less than 30 horsepower are to be taxed \$10 annually, over 30 horsepower \$20, the proceeds to be turned over to the state highway commission for road improvement. A new speed regulation of 15 miles per hour in built-up portions of the cities of New York state and 25 miles in outlying portions is provided. A speed in excess of 30 miles an hour in country districts, is made prima facie evidence of negligence. No one less than 18

years old is to be licensed to run a car. A bill just introduced at Albany by Assemblyman Callon, of Columbia, is quite similar to the Dana measure.

National Favors Speedways—The National Motor Vehicle Co., of Indianapolis, has decided it will enter cars only in such racing events as are held on specially-built speedways this season. In reaching this decision, the company holds to the theory that smaller tracks, with short turns, are serious handicaps to high-speed cars. The Nordyke & Marmon Co. will enter cars in the Los Angeles meet to be held next month, as will the Cole Motor Car Co.

Louisville Club's House Warming—At its new quarters in the rooms of the Commercial Club, the Louisville Automobile Club gave its first social function of the winter season last Saturday night. The affair was in the nature of a beefsteak supper. Prior to the beginning of festivities, the club's regular quarterly meeting was held. Fire Chief Lehan and Chief of Police Lindsay were made honorary members of the club. The business session was adjourned at 10 p. m. and President Eugene Strauss was presented by the members with a loving cup.

Rambler Truck Rescues Horses—The other day the Rambler hose truck used by the San Diego, Cal., department was pressed into service to relieve a team of horses after the team had become stalled in a mire. The horse-drawn apparatus was on a railroad track with each pair of wheels against a rail down to the hubs in mud. The Rambler truck pulled it out without any damage or effort. This truck has been in service 6 months and the service that it has given, coupled with the cost of upkeep, has more than repaid for its substitution in place of a horse-drawn apparatus. The Rambler has answered eighty-two alarms and covered about 2,000 miles since it has been working.

Would Fix Crossroads—The Good Roads Association of Baltimore county has prepared a special good roads bill for Baltimore county which it will ask the legislature to pass. The bill provides for the issue of bonds for \$1,500,000, the sale of which shall be in the hands of the Baltimore county commissioners, and from this amount \$100,000 shall be given to each of the fifteen districts, to be spent in 5 years for roads. The idea of the association is to improve the crossroads, as the state has appropriated money for the turnpikes. Major Henry G. Shirley, roads engineer for Baltimore county, says he can rebuild every bridge in the county not now a permanent structure, excepting the six largest bridges, with \$20,000 a year for 5



MIDLAND CARS USED TO CARRY JAPANESE VISITORS AT KANSAS CITY

years. This will eliminate the 5 cents on the \$100 in the present tax bill for the purpose of building bridges.

Colonel Joyce Through—Colonel Frank M. Joyce, for 3 years president of the Minnesota State Automobile Association, Friday definitely announced that he would not accept another term as the head of that organization. His successor will be chosen at the annual meeting to be held in St. Paul this week.

Commissioners Relent—A rule prohibiting the use of chain-equipped tires in Fairmount park resulted in the arrest of a score or more of Philadelphia motorists during the past 2 weeks. A combined appeal to the park commission, however, has resulted in a revision of the rule to the extent of allowing the use of such anti-skid devices as long as the park roads are covered with ice and snow. All prosecutions have been withdrawn and fines returned. Director of Public Safety Clay has instructed Philadelphia's police officers to strictly enforce the ordinance of June 18, 1906, prohibiting the use of Gabriel horns, sirens and other such signals on the streets of the Quaker City.

Longer Little Glidden—There already is some talk of the route of the Minnesota State Automobile Association's Little Glidden tour for the coming summer. Last August when the run from Minneapolis to Fargo was held with such success, there was talk of a longer run for the Dispatch trophy in 1910 and Grand Forks or Devil's Lake were mentioned as the objective points for the tour. There is a hearty spirit of good fellowship among North Dakota motorists, and it is certain a most enjoyable run could be planned to Devil's Lake from Minneapolis and St. Paul, providing the managers of the run could be placed in possession of facts regarding the mileage, roads and accommodations.

Syracuse Election—The annual meeting of the Automobile Club of Syracuse, of Syracuse, N. Y., was held in the Yates hotel. The election of officers resulted in the unanimous return of the entire board, consisting of: President, H. W. Smith; vice-presidents, H. P. Denison and Dr. C. M. Ryan; secretary and treasurer, Forman Wilkinson; directors, B. E. Watson, C. C. Bradley, Jr., A. T. Brown, W. L. Brown and J. William Smith. The report of Secretary Wilkinson showed a remarkable growth during the year both financially and in point of membership. The year closed with a total of 410 members, being a gain of 188 during the year. Of this number 373 are resident and thirty-seven non-resident. The season's signposting campaign resulted in the placing of over 600 road and route signs on the roads leading in and out of Syracuse. There are but few roads within a radius of 40 miles that have not been thoroughly posted. The club is watching closely all proposed state legislation relating to motoring and it stands ready to quickly defend the rights



ASA PAINE, OF MINNEAPOLIS, ON FLORIDA HUNTING TRIP IN STODDARD-DAYTON

of motorists when the least sign is shown of their being attacked. The donation of a large silver trophy to be contested for annually by members of the club, by B. E. Watson, was accepted by the meeting.

Country Home For Bisons—The directors of the Automobile Club of Buffalo have decided that a country home will be bought or erected by the club. The building will be on some good road leading into Buffalo. President Laurens Enos hopes that the clubhouse will be ready for occupancy by July 1. The location will be announced later.

Climb For Ossining—The Upper Westchester Automobile Club, of Ossining, N. Y., which has seventy members, has voted to set aside the afternoon of the third Saturday of each June for a hill-climbing contest on Sunset hill. This hill lies in both the town and village of Ossining and by making the course 1 mile long allows a level stretch of $\frac{1}{8}$ mile for a finish.

Chauffeurs Hold Election—The Professional Chauffeurs' Club of Buffalo has elected the following officers: W. M. Oliver, president; H. Finch, vice-president; H. Hughes, financial secretary; E. Doody, corresponding secretary; H. Zimmerman, treasurer; L. Norton, chairman press committee; J. Campbell, sergeant-at-arms. J. Langwith, H. Martin, William Short, C. J. Bessinger, M. Merloff, L. Merhoff, H. A. Guyer, L. J. Franclemont, M. Hanavan and T. Brose, directors.

Interstate Highways Boom—The states of Idaho, Utah, Wyoming and Colorado will join hands in the promotion and establishment of good roads, interstate highways being suggested as the outcome of the movement to be launched at a meeting to be held in Salt Lake January 26, 27 and 28. The convention which is to be held under a call issued by Governor Spry, of Utah, through discussion and interchange of ideas is expected to result in the adoption of a system of road construction particularly adapted to the topo-

graphical, climatic and commercial requirements of the intermountain country. Governor Brady announces his intention to appoint forty delegates to represent the state of Idaho.

Oil Inspector Reports—Sid Conger, state oil inspector of Indiana, has just filed his report for 1909 with Governor Marshall, showing that the receipts of his office showed a large increase over 1908, due to the increased consumption of gasoline and oil by motor cars. During 1908 the receipts were \$3,225.50 less than last year, when they amounted to \$42,987.35.

Favors a Special Tax—The annual report which has just been issued at Albany by the New York state commission of highways contains an interesting feature relating to motor car traffic. The report says that this traffic has compelled more expensive methods of construction which will in general aggregate at least \$2,500 a mile in New York state. This construction, upon 500 miles of road, will cost annually over \$1,000,000. It appears to the commission that an annual registration fee, which will collect not less than \$500,000, should be put upon motor car owners, and that the entire proceeds should be devoted to the care and maintenance of improved highways.

A Simplex Cyclone—George Robertson is to have a new specially-built Simplex racing car this season, the details of which have just been announced by the Simplex Automobile Co. The car being made in New York city is to be a 90-horsepower affair with one of the regular 90-horsepower stock motors, but the chassis will be very light and of special design adapted to track work. It will have a wheelbase of 99 inches, chain-drive, with the seat mounted close to the rear axle. A feature of the design will be the steering post on the left side. This car is to weigh about 1,800 pounds. Robertson has just entered the trade in New York city, taking the agency for the Parry.



Among the Makers and Dealers



Change at Findlay—The Jackson garage has succeeded the Bennett garage and Motor Tavern at Findlay, O.

Browne Sales Agent—George W. Browne, of Milwaukee, has retired from the retail end of the business, having disposed of his Milwaukee store. He now is factory sales agent for the American Motor Car Sales Co., handling the Overland and Marion, with headquarters in the Majestic building, Milwaukee.

Buys Stafford Plant—The Stafford Motor Car Co., of Kansas City, Mo., has been incorporated with a capital stock of \$100,000 and has taken over the good will and property of Perry Stafford at Topeka, Kan. The officers of the new company are: Fred C. Merry, president and general manager; C. C. Hoeffler, vice-president; W. G. Witcomb, secretary and treasurer, and Perry Stafford, factory manager. The company

will continue to manufacture the four-cylinder Stafford pleasure car and also light delivery wagons.

New Rapid Plant Planned—The Rapid Motor Vehicle Co., of Pontiac, Mich., announces that as soon as the weather permits in the spring it will begin work on a plant, 60 by 140 feet in dimensions and four stories high. The factory will be of cement and will be used in extending the company's business.

Will Stay In Racine—The Racine Mfg. Co., making motor car bodies, dashes, etc., at Racine, Wis., now is employing 50 per cent of the total number of workmen in the big shops before the disastrous fire of December 12, which wiped out the buildings. As fast as new machinery can be installed in temporary quarters, more skilled men are engaged. It is now certain that the company will remain in Racine, as

business men and manufacturers have subscribed enough money to warrant an early start on the new buildings.

Has Elmira For Buick—Charles W. Bishop has secured the Elmira, N. Y., agency for the Buick motor car. The cars will be sold in the Bishop garage in Church street.

Making Magnetos—The Duplex Coil Co., of Fond du Lac, Wis., will start the manufacture of magnetos on February 1, and new machinery, screw tools and drill presses are now being installed in the factory.

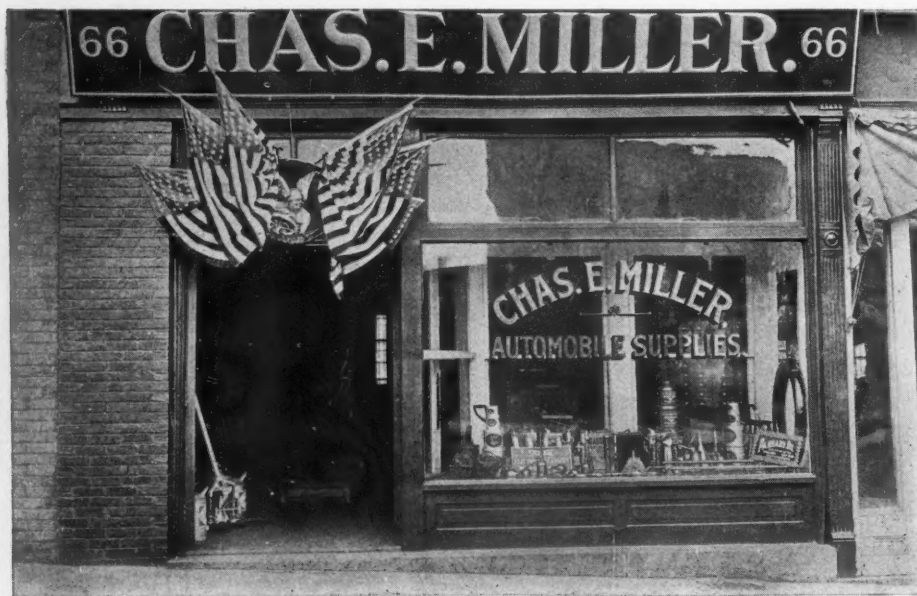
Increasing Capacity—At Akron the International Harvester Co. is planning to erect several additions to its plant in the spring in order to have a capacity of 4,000 cars. More than \$75,000 worth of new machinery for the additions has been ordered.

Stein Company Growing—The Stein Double Cushion Tire Co., of Akron, O., has increased its capital stock from \$100,000 to \$200,000. During the coming summer the plant on Second avenue will be enlarged by the erection of a large addition. C. K. Sunshine is president and M. M. Neuman secretary-treasurer.

Will Make Carbureters—The Atkins Mfg. Co. has been organized in Minneapolis with \$100,000 capital to manufacture a carbureter. A. J. Moore is president of the company, C. E. Hartkopf is vice-president and treasurer, E. G. Atkins is secretary and general manager. The appliance was invented by E. G. Atkins.

New In Baltimore—Five makers of cars have established agencies in Baltimore, none of which has been represented there before. They are the Apperson, represented by the Boyd-Eastman Co.; Hudson, handled by the Zell Motor Car Co.; the Alco, Neely & Ensor, agents; Flanders, Dixon C. Walker Motor Car Co., representative and the Matheson, placed with E. L. Leinbach.

Appointed E-M-F Agents—Indianapolis tradesmen have been appointed district agents for the E-M-F. These are Paul Smith, of the Indianapolis Motor Car Co.; C. R. Newby, formerly with the Indiana Automobile Co. and Buick Motor Co., and B. W. Twyman, who was the first Indiana representative of E-M-F cars. Mr. Smith will retain his interests in the Indianapolis Motor Car Co., which sells commercial cars exclusively. The recently organized Reliable Auto Exchange in Indianapolis has obtained the E-M-F agency in that city, purchasing outright fifteen cars. The company also represents the Continental 35 and the Atterbury trucks. Later the company expects to establish a salesroom in



ATLANTA BRANCH ESTABLISHED BY CHARLES E. MILLER



GUY SMITH'S FRANKLIN HEADQUARTERS IN OMAHA

Massachusetts avenue in addition to its present establishment in East Washington street.

Test of the Sebring—The Sebring Motor Car Co., of Sebring, O., recently completed its first car, a six-cylinder 40-horsepower. A run was made from Sebring to East Liverpool to test the car.

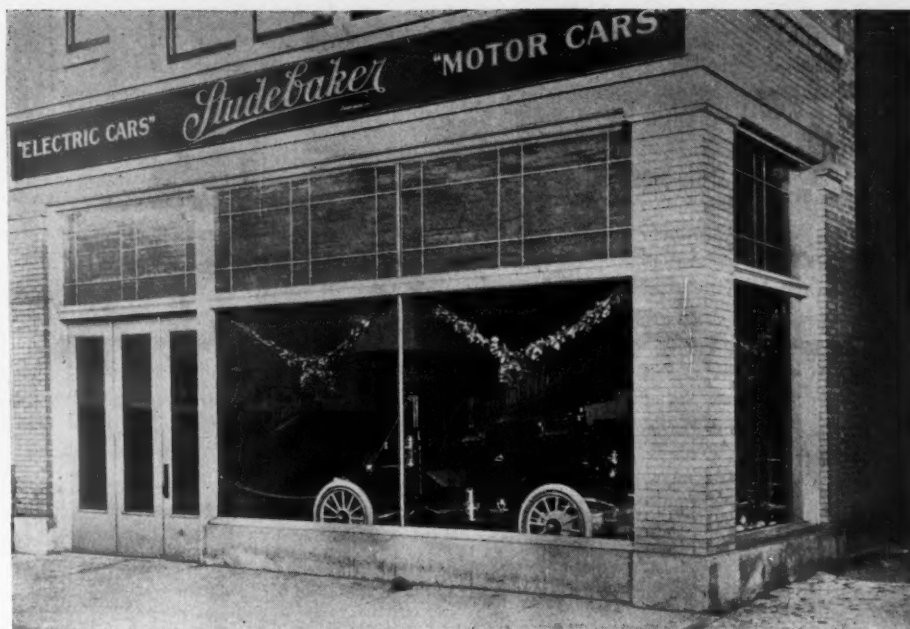
Handling Maytag and Mason—The Maytag company has opened a branch for business in Minneapolis to handle the Mason and Maytag cars. The Maytag is a four-cylinder car and the Mason a two-cylinder car.

Working On Electric Garage—The Imperial Motor Car Co., of Kansas City, agent for the Woods electric, announces that work has begun on its new building, a two-story garage, at 3212-3214-3216 Troost avenue. Occupancy is promised by April 1. O. V. Dodge, Jr., is president of the company and Guy W. Morgan manager of the company.

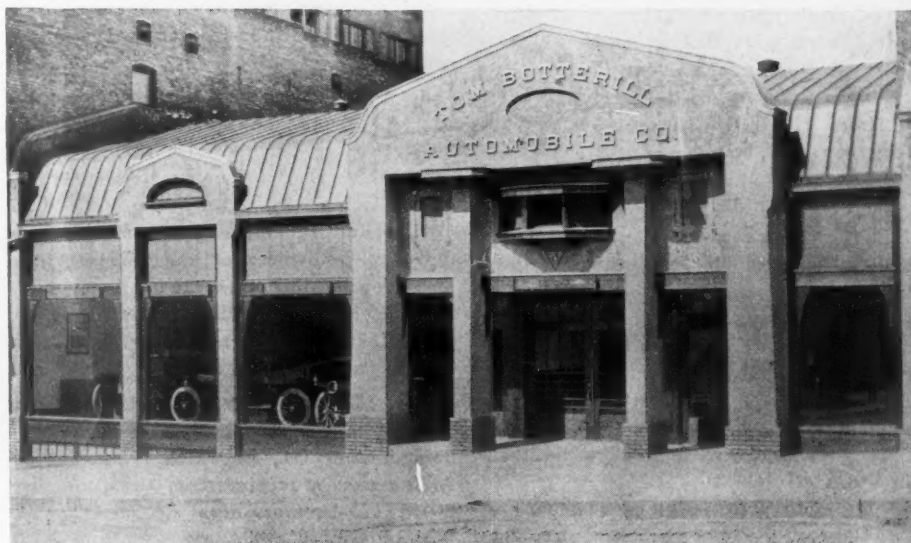
Treasury Ruling—Treasury department regulations of November 27, 1907, providing for the allowance of drawback on motor cars manufactured with the use of imported carriage cloth, metal fittings, plate glass, tires and other materials and parts, have been extended to cover motor cars manufactured by the Fiat Automobile Co., of New York, from similar imported parts and materials.

Salt Lake's Addition—The Tom Botterill Automobile Co. has located its Salt Lake City store at 36-42 State street, the building being of the mission style, 67½ by 185 feet. The garage will accommodate fifty large touring cars, while in the basement is located a machine shop. The sales room is 45 feet wide and 60 feet deep. The Botterill company is agent for the Pierce-Arrow and the branch of the Denver concern.

Philadelphia Events—The Krouse Motor Car Co., 317-21 North Broad street, has been awarded the Philadelphia agency for the Halladay car. The Stoddard-Dayton Auto Co., of Philadelphia, will get into its new building, 253-255 North Broad street, on Saturday, January 22. The concern will also handle the Courier, another Dayton product. The Lyman Tire and Rubber Co., with temporary quarters at 1324 Arch street, Philadelphia, has made arrangements with the Republic Rubber Co., of Youngstown, O., by which it will control the sale of Republic tires throughout eastern Pennsylvania, southern New Jersey, Delaware, Maryland, District of Columbia and Virginia. The Collings Carriage Co., with salesrooms at 1719 Chestnut street, has entered the trade in an impressive way by securing the Philadelphia sales rights for the Rainier, the Waverley electric and the Crane & Breed gasoline commercial cars. The Philadelphia Palmer-Singer agency will move into its new quarters at 336 North Broad street, about February 1. The Stoye-Vogel Co., Broad and Race streets, which represents the



STUDEBAKER BRANCH HOUSE LOCATED IN COLUMBUS, O.



STORE OF TOM BOTTERILL AUTOMOBILE CO. AT SALT LAKE

American car in Philadelphia, has acquired the local sales rights for the Cole 30 to round out its line.

Starts In Buffalo—The Chittenden Motor Car Co. has been incorporated in Buffalo. The capital stock of the concern is \$10,000.

Poole With Babcock—John A. Poole, who in the past represented the Oldsmobile and Buick in foreign lands, has become general sales agent for the Babcock Electric Carriage Co., of Buffalo.

Change in Distribution—Owing to the rapid extension of business on the Ronson wrench the manufacturer, the Ronson Specialty Co., 7-15 Mulberry street, Newark, N. J., is taking care of the distribution outside of Greater New York and Long Island. While Cryder & Co., Sixty-third street and Park avenue, New York City, have formerly been sole selling agents, they now will continue to act as sole distributors in the territory above referred

to, where the business is of such importance as to necessitate their undivided attention.

Premiers for Honolulu—A carload of 1910 cars has been shipped by the Premier Motor Mfg. Co. to its Honolulu, H. I., representative, E. O. Hall & Son.

Bowling Alley a Garage—The Smouse-Burkey Auto Co., of Vinton, O., will convert the bowling alley into a garage and repair shop. The concern has also taken the agency for the Mason.

Long Company Buys Land—The Long Mfg. Co., of Chicago, maker of radiators and accessories, has bought a tract of land in Detroit fronting 320 feet on Cass avenue and extending from Amsterdam to Burroughs avenue. Plans have been prepared for a two-story modern plant with 100,000 square feet and employing 1,000 men. The new plant at Detroit will be operated as a branch of the main plant in Chicago. The capital of the company has

been increased to \$300,000.—J. B. Long is president and treasurer and Louis Shisler secretary.

Woodruff on Chalmers Board—C. A. Woodruff has recently been appointed purchasing agent and member of the board of directors of the Chalmers-Detroit Motor Co.

Looking For Salesroom—The Francisco Motor Car Co., of Columbus, O., organized some time ago by J. B. and C. M. Francisco to handle the Ohio in central Ohio, has established an office at 338 North High street. A location for the salesroom will be secured later.

Tire Strike Almost Over—The plant of the Hartford Rubber Works Co. at Hartford, Conn., which has been the scene of a strike of the tire makers, has been operated evenings for a week. It is reported from authentic sources that many of the men have returned to work. At any rate the situation is simmering down, to all appearances.

Sheboygan Garage—The Maurer Garage Co., of Sheboygan, Wis., has been incorporated with a capitalization of \$15,000. Albert G. Maurer, president of the concern, recently erected a large garage near the Hotel Foeste, the largest hostelry in Sheboygan. Associated with him in the corporation are William Caspar and Fred C. Voigt, machinists of wide experience.

Superior Looks Good—The Commercial Club, of Superior, Wis., the second largest city in Wisconsin, reports that several motor car manufacturers have made inquiries as to sites along the new belt line, the Interstate Transfer railroad, giving facilities for Superior and Duluth, Minn., the twin cities. The steel trust is now erecting the first unit of a huge plant at this point.

Wants More Room—The Tennessee Auto Co., of Nashville, Tenn., which already has a garage fronting 100 feet on Broadway, one of the main thoroughfares of the city, and running back over 200 feet, is already finding itself crowded for room, although the new building has been up only 2 years. Plans are being considered for either adding a second story or for buying and building on adjoining ground.

Buys a Toledo Garage—The Toledo Auto and Garage Co. has been organized in Toledo, O., to take over the business, real estate and equipment of the Twenty-first street garage which was owned by George L. Craig. H. L. Arnold, president and manager, and A. W. Campbell, vice-president and sales manager, are the organizers of the new concern. Work is already under way for a large addition to the present building. The addition will be 80 by 220 feet and will give a total floor space of 33,600 feet. The new structure will be exclusively for gasoline cars and a fireproof wall will separate it from the present quarters, which will be used for the storage of electrics only. A feature entirely new to Toledo will be the stalls or

compartments for the company's boarders. The new company will handle the Franklin, Stearns and Jackson.

Has Ford In Des Moines—The Herring Motor Car Co., of Des Moines, will open up for business shortly at 912-14 Locust street. It will be under the management of C. L. Herring and will handle the Ford exclusively.

Addition for Hess—The Hess Spring and Axle Co., of Pontiac, Mich. opened up a new addition to its plant in the form of a treating plant for the steel used in the manufacture of the vanadium spring. All steel used in the spring will be tempered in the new plant, which is 62 by 160 feet and which gives employment to seventy-five men.

Big Order For Hudsons—The Elliott Ranney Co., New York distributor of Hudson motor cars, has contracted to take 1,500 Hudsons for retail distribution in Manhattan and environs during the forthcoming season. This concern had previously placed a reservation order for 1,000 roadsters, but with the announcement of the new touring car the extra order was entered.

Steel for New Plant—Fourteen carloads of steel for the new plant of the Corliss Motor Co., of Corliss, Wis., the \$1,000,000 concern formed to produce the former Owen Thomas six, already have arrived at Corliss and several carloads are coming daily. The owners of the company are also proprietors of several big steel mills in the vicinity of Pittsburgh. An inter-urban electric line may be built from Racine to Corliss.

New Board Chosen—At the annual meeting of the stockholders of the Mansfield Rubber Co., in which a number of Akron men are interested, the following board of directors was elected: C. H. Walters, F. H. Walters, C. R. Grant, James E. Waite, R. C. Kinnaman, F. M. Bushnell and F. A. Wilcox. F. A. Wilcox is president, F. M. Bushnell treasurer and F. W. Walters secretary. The plant recently sustained a damage of \$16,000 by a fire.

New Tire Ruling—Akron, O., has secured a ruling from the treasury department at Washington, according to late advice. This has to do with the exportation of tires to Europe. The B. F. Goodrich Co. uses leather butts and metal rivets or studs. On this a drawback will be allowed equal in amount to the duty paid on the imported materials used less the legal deduction of 1 per cent. The regulations prescribe that the preliminary entry must show the marks and number of the shipping packages, and the number of tires of each size contained in each package and in the entire shipment. The drawback must show the total number of tires of each size, exported, the quantity of waste and value thereof. The entry must further show in addition to the usual averments that the exported tires were manu-

factured of materials and in the manner set forth in the manufacturer's sworn statement at New York.

Closes Streets for Plant—The common council of Owosso, Mich., has passed an ordinance closing four streets in the fourth ward so that the Reliance Motor Truck Co. may build a large factory on land which it owns in the vicinity.

Will Make Transmissions—The Direct Drive Mfg. Co., Odd Fellows building, Indianapolis, Ind., has been organized with paid up capital of \$50,000 to manufacture the Parkinson direct drive transmission. Officers are W. H. Parkinson, president; B. F. Meixell, general manager; A. C. Downing, secretary and treasurer.

Handling the Kissel—The Kissel Automobile Co. is the latest concern in Omaha to handle motor cars. The firm is composed of H. W. Holtwinger, a retired capitalist; Carl E. Holt, formerly with the Coit Automobile Co., and R. J. Mansfield. Temporary quarters have been secured at 2016 Farnam street. The company will handle the Kissel and will erect a new garage soon on Farnam street.

From Buggies to Cars—The Mound City Buggy Co., of St. Louis, one of the oldest carriage houses in St. Louis, has announced that it has gone into the motor car business. The company has obtained two agencies in St. Louis territory. One is the Powerecar, built in Cincinnati by the Powerecar company; the other is the McIntyre high-wheel, solid-tire car, intended for the country trade, and the McIntyre delivery car for city trade.

More Indiana Car Factories—Announcement is made of the organization of the Standard Automobile Co., of America at Wabash and the Diamond Automobile Co. at South Bend. The former has been incorporated with an authorized capitalization of \$500,000 with G. J. Kobusch, W. S. McCall, A. R. Walton, W. B. Phelps and F. D. McMahan. The Diamond company has been capitalized at \$50,000 by Joseph W. Ricketts, Hannah Ricketts and Grace C. Ricketts.

Ford Plant Moved—The last day of December, 1909, saw fifty-five cars manufactured in the old and outgrown plant of the Ford Motor Co.—the first day of 1910 saw sixty cars shipped from the new Ford plant at Highland Park, Detroit. The change was made quickly and quietly. The old factory on Piquette avenue will be used as a parts factory, tool room and pattern shop. The present capacity of the new plant is 200 complete cars per day. In addition to the assembly plant, a 75 by 862 four-story concrete and glass building, there is a machine shop 840 by 140, one-story, a shop office building 75 by 140, four-story; a power house and a 5,000 horsepower gas producer plant already built. A foundry 200 by 200 is to be started at once and a three-story 100 by 300 office building will be built in the spring. Other buildings being planned

will soon cover the entire 60-acre tract which the Ford company owns at Highland Park.

Building in New Orleans—The Crescent City Auto Co., of New Orleans, La., has started work on its new garage at Lafayette and Dryades streets. The building is 90 by 100 feet, two stories high and is built entirely of concrete and steel.

Firestones At the Show—The Firestone Tire and Rubber Co. reports that after a canvass of tire equipment at the recent garden show it was discovered that 76.5 sets of Firestones were fitted as the original equipment of the cars, which number, it is claimed, placed this concern in the lead in this respect at the show.

Buick's 1909 Production—During the year 1909 the Buick company put out 14,603 cars. The material cost \$10,812,790. The company now employs 5,500 men and the 1910 capacity will be 250 cars per day. The company, during 1910, will have fourteen factories in operation at Flint and will employ 8,000 men.

New Supply House—The United Motor Supply Co., of Minneapolis, which has been incorporated for \$50,000, is occupying temporary quarters at 917 First avenue. The business is being managed by George H. Riebeth, formerly of the Pence Automobile Co., while Paul G. Niehoff, of Milwaukee, is vice-president, and C. T. Mortenson, secretary.

Will Make Bodies—The Lowell Auto Body Co., of Lowell, Mich., has been organized with a capital stock of \$30,000 with R. J. Flanagan president, A. H. Peckham vice-president and H. A. Peckham secretary and treasurer. The company is erecting a plant which will be used for the manufacture of bodies and which will be completed in the early spring.

Wisconsin Events—The Swiss Magneto Co. has been incorporated at Madison, Wis., by Bascom E. Clarke, James L. Clarke and E. F. Parkinson. The capital stock is \$20,000. George Ruggles is building a commercial garage costing \$7,500 at 420 Twelfth street, Milwaukee. The Baack-Reed-Gage Co., of Janesville, Wis., recently organized, has contracted for the Kisselkar and Maxwell lines for 1910. The new garage will be ready for occupancy on February 1.

General Motors Detail—Articles of incorporation have been filed with the secretary of state by the General Motors Co. of Michigan, with a capitalization of \$10,000. It is the purpose of the company to manufacture, sell, and buy cars and parts. No location is given for the factory. W. J. Mead, of Lansing; W. C. Durant of Flint, and C. R. Hathaway, of New York city, are credited with one share each, while C. R. Hathaway, trustee, holds ninety-seven shares. It is explained that the company is a new legal entity intended to take over the land recently acquired by the General Motors Co. At present it is

impossible to determine what the actual capitalization will be, so a merely nominal sum is named subject to amendment later.

Wood Knox Branch Manager—Frank B. Wood has succeeded J. B. McCausland as manager of the Chicago Knox branch. Mr. Wood has been identified with the Knox sales staff for some time.

Big Maxwell Pay Roll—The Newcastle branch of the Maxwell-Briscoe Motor Co. probably has more names on its pay roll than any other motor car manufacturing plant in Indiana. At a recent pay roll 1,802 names were represented, drawing a total of \$30,000 in one week.

Want a Receiver—Suit has been filed in the circuit court of Baltimore for the appointment of a receiver for the New Bridge Garage Co., North avenue and Oak street, by Thomas T. Brown, Jr. It is alleged in the bill of complaint that the company is hopelessly insolvent.

Great Smith Growing—The Smith Automobile Co., a Missouri corporation located at Topeka, Kan., manufacturer of the Great Smith 45, has completed a partial reorganization. An additional working capital of \$100,000 cash has been provided. The new officers are headed by O. H. L. Wernicke, of Grand Rapids, Mich., president, Dr. L. Anton Smith retiring. The distribution of the cars will be under the management of Walter L. Smith. The output of the factory will be quadrupled.

May Get Great Smith Plant—Negotiations are under way looking to the moving to Grand Rapids, Mich., the plant of the Smith Automobile Co., manufacturer of the Great Smith car, now located at Topeka, Kan. It is said that arrangements have been practically completed for the securing of the industry for Grand Rapids. In case the deal goes through the factory at Topeka is likely to be operated as a branch plant. It is planned, if the factory is established in Grand Rapids, to increase the capitalization from \$200,000 to \$500,000 and to turn out between 500 and 1,000

cars for the 1911 season. The factory would be enlarged from time to time until 10 acres of ground were occupied.

Federal Company Moves—The Federal Motor Car Co., which handles the Oldsmobile and Oakland cars in the Pittsburg district, has moved its headquarters from Baum street to Henry street, east end, where it will have more than 40,000 square feet of floor space.

New Hoosier Concern—C. C. Cohee, E. J. Hicks and E. R. Lamb have organized the Crescent Automobile Co. in Indianapolis and have leased the building at 23 East Ohio street, recently vacated by the Peck Motor Car Co. The company has arranged for the Cole agency.

Buffalo's Latest—The Superior Motor Vehicle Co., with a capital stock of \$200,000, has filed a certificate of incorporation in the county clerk's office in Buffalo. The directors are Henry A. Kamman, Bert H. Bean, Ira T. Gleason, J. Willard Lansing, Frederick F. Klinek, William G. Houck and Frederick Hummel.

Robinson Changes—Leonard B. Robinson has retired from the position of manager of the Pioneer Motor Car Co., of Sioux City, Ia., to become manager of a branch house of the Studebaker company at Louisville, Ky., from which house the company will distribute cars over four surrounding states. L. C. Lessenich, president of the Pioneer company, will take the active management of that company.

E-M-F's Quaker Agency—Following the legal determination of the distribution rights of the E-M-F, that car and the Flanders will be represented in Philadelphia by an agency, with temporary quarters at 1229 Chestnut street. J. C. Schwartz is president of the new concern; J. E. Gomery, secretary and treasurer, and Frank Yerger, technical manager. When the new concrete structure at Broad and Callowhill streets is completed, about February 1, the new company will establish its quarters there.



NEW FACTORY OF H. C. MOYER AT SYRACUSE, N. Y.



Legal Lights and Side Lights



CANNOT FIND PREJUDICE

A DECISION in the case of Jones v. State, 122 Northwestern (Nebraska) 852, mentions as a ground of reversal a point which many a motor car driver has learned and that is the prejudice against motor cars of the average jury. The defendant was convicted of operating a car at a rate of speed in excess of the statutory limit. He appealed the case and, among other things, contended that the verdict in the lower court was not sustained by sufficient evidence, and that the verdict of the jury was the result of prejudice. The supreme court affirmed the decision of the lower court, and in the course of the decision says:

"The evidence was sufficient to satisfy the jury that the statute had been violated, and if there is sufficient evidence to sustain the verdict, it must stand, whatever the opinion of this court might be upon the same testimony, if it were its duty to pass upon the facts." The court then reviews the evidence of the complaining witness to the effect that the car was going at the rate of 15 miles an hour in a populous part of the city, and the evidence of the appellant's witness that the car was going at a rate of speed well within the 10-mile rate provided by statute. The court, concluding, says:

"The evidence would sustain a verdict either of conviction or acquittal, depending entirely upon which set of witnesses the jury found most worthy of credit. It is argued that the verdict is the result of prejudice of this jury against the use of motor cars. It is not impossible that the verdict is unjust and the result of prejudice, but we cannot so declare when there is sufficient evidence to support it and no extraneous facts shown which cast any reflection upon the good faith or impartiality of the jury."

BACKS UP THE JURY

The defendant in the case of Schoening v. Young, 104 Pacific (Wash.) 132, was driving her motor car at about the rate of 10 miles per hour when she reached a street crossing at which she desired to turn at right angles into the intersecting street. As she made the turn she collided with and injured the horse and carriage of the plaintiff. The evidence was somewhat in conflict as to whether defendant kept to the right side of the street after making the turn. The jury found for the plaintiff and the case, on appeal, was affirmed. The higher court held that while it would not have been negligence for the

defendant to have made the turn and to have kept on the right side of the street, yet that the court could not overturn the finding of the jury as to the facts.

RULING IN REPLEVIN SUIT

A complaint in a replevin suit, Swenson v. Wells, 122 Northwestern (Wis.) 724, alleged in substance that the plaintiff owned and had possession of a motor car of the value of \$1,500; that the defendant claimed that plaintiff had traded the car for certain lots which defendant had deeded to one Walker; that the plaintiff agreed to trade the car for the lots if the lots were as represented, and the defendant wrongfully took the car from the plaintiff. The defendant by way of answer to this complaint set up the facts that the contract for the sale of the car was in writing, and was between plaintiff and Walker jointly, and defendant, and that Walker still was living. The court held that in the action of replevin for the car Walker was a necessary party.

BLAMES THE DRIVER

It was brought out in the case of Weil v. Kreutzer, 821 Southwestern (Ky.) 471, that the defendant was driving his motor car through a street in the city of Paducah, Ky., and collided with and injured the plaintiff, who was a pedestrian, and who was crossing the street. The evidence showed that the defendant was driving his machine and that he saw the plaintiff some 75 or 100 feet away. Defendant promptly sounded his horn and plaintiff then turned to avoid the car. Both parties then began to dodge one another on the street, and in each turn made by the plaintiff the defendant turned in the same direction, with the honest intention of avoiding the plaintiff. A collision ensued and the plaintiff was injured. In the course of the opinion the court makes the following interesting observations on the subject of motor cars:

"What happened was a confusion of the minds of the parties. Each was trying to avoid the other, but each was getting in the way of the other, and as a result the collision took place. The negligence of the defendant consisted in his failure to recognize the great danger that would accrue to the plaintiff from the collision. He had no right, it seems to us, after he saw the confusion of mind which was taking place between him and the plaintiff, to continue zigzagging in the street at the imminent hazard of colliding with the pedestrian. Greater care was incumbent upon him by reason of the deadliness of the machine he was driving. The possession of deadly or dangerous instruments always entails greater care upon the possessor."

HOLDS OWNER IS LIABLE

The owner of a motor car in St. Louis was recently held to be liable to respond in damages for the negligent act of his chauffeur in backing the car in question into a pedestrian, the case being Shamp v. Gambert, 121 Southwestern (Mo.) 770. The facts were substantially these: The plaintiff, a woman, was standing at a street crossing waiting for an approaching street car to stop at the place where she was standing. Her attention was upon the street car and defendant's motor car was not at the time in motion. When the street car had about reached plaintiff, the defendant's chauffeur, without any warning, backed his machine upon and over the plaintiff, thus severely injuring her. A recovery of \$3,500 was had by the plaintiff, and upon appeal the case was affirmed. The court said in part: "She had taken her position only a moment before at the usual stopping place of the street cars, in order to enter the car when it stopped. The street car was then approaching and in near proximity to her. Plaintiff's attention was directed to the approaching car, as was entirely proper. The motor car was not coming towards her, but, on the contrary, was standing at rest, against the pavement, 8 or 10 feet away. Plaintiff certainly had no reason to suppose that it would be run backwards upon her without warning, by the careless act of defendant's servant."

"And even though it does not appear that the chauffeur was present at the particular time and place in question by the instruction from his master, the defendant, or perchance in the performance of his duties in conveying his master either to or from the Union station, it does appear that he was acting within the scope of his authority as defendant's chauffeur; that is to say, he was operating defendant's motor car, the very act for which he was employed. The word 'chauffeur' involves the idea of a person having charge of or operating a motor car. The admission of the defendant to the effect that it was his motor car, and that his chauffeur was in charge of the same at the time of the injury, of course, tends to prove that the chauffeur was acting in the line of his employment; for if he was defendant's chauffeur, then his duties were to operate defendant's motor car."

The court then holds the master liable for the negligence of his chauffeur, as the chauffeur was acting within the line of his employment.





Brief Business Announcements



Warren, Pa.—C. E. Beckley has secured the agency for the Hupmobile runabout.

Washington, D. C.—The Winton agency in Washington has been given to John J. Fister, the old-time bicycle rider. He also handles the Mora.

Pittsburg, Pa.—The Empire Motor Car Co. has secured the agency for the Empire 20 and is exhibiting the cars at its garage at Grant boulevard and Thirty-third street.

Boston, Mass.—The Henderson-Lowe Co. has taken on the Hupmobile in Boston and George E. Tufts is manager of that branch of the company, the firm having other cars.

Lebanon, O.—The Kilpatrick-French Motor Car Co., capital \$16,000, has been formed by J. A. Kilpatrick, A. N. and Albert French and Howard and C. Wilbur Ivins.

Washington, D. C.—Napoleon Hill, who conducts the Automobile College of Washington, has arranged with the Carter Motor Car Corporation to handle the Washington car in the District of Columbia.

Milwaukee, Wis.—Kaufmann & LeMarre have engaged in the repair and motor car refinishing and painting business at 271-275 First avenue. A new factory, 67 by 120 feet, has been erected for them.

Milwaukee, Wis.—The Standard Brass and Iron Works, 1820 St. Paul avenue, has started the manufacture of a line of tire irons in addition to the extensive repair shop for motor cars. The company has its own foundry.

Boston, Mass.—Frank E. Wing, Boston representative of the Marmon, has leased a five-story building on Stanhope street that he will use for a garage and repair shop. The salesrooms of the Marmon will still be retained at the motor mart.

New York—D. L. Ormsby is erecting a garage 50 by 100 feet without posts on a plot 100 by 100 feet at 447 and 453 West One Hundred and Fifty-first street. Mr. Ormsby was formerly proprietor of the Washington Heights and the Audubon garage.

Milwaukee, Wis.—The Curtis Automobile Co., Wisconsin agent for the Reo, has leased the three-story brick building on Eighth street, south of Grand avenue, for its garage and salesrooms. The Reo headquarters have been situated at 180 Fifth street, Milwaukee, for several years.

Denver, Colo.—The Johnston Motor Car Co. has moved into new salesrooms at 1620 Broadway, where the Peerless, Premier, Everitt and Falcar will be handled. Paul Tobin, who has been the Peerless representative here for 2 years, is associated with the company. Harold Brinker is also in the sales department. The company will

retain the garage and repair shop at 1435 Cleveland place.

St. Louis, Mo.—The agency for the Lexington car has been obtained by the Gardner Motor Car Co.

Boston, Mass.—The Parry car is now represented in the Hub with W. A. Weber, formerly with the American car, as manager of the agency.

Monongahela, Pa.—A. D. Spencer, Charleroi, Pa., is preparing to establish a Buick agency at Monongahela and has started work on a large garage in the latter city.

Washington, D. C.—Lester D. Moore, Jr., who handles the Palmer-Singer, Premier and Reo in Washington, is making extensive improvements in his salesroom at 829 Fourteenth street.

Milwaukee, Wis.—The Western Motor Car Co., of Chicago, has been selected as distributor in Chicago, northern Illinois and northern Indiana for the Sternberg motor trucks, manufactured by the Sternberg Mfg. Co., of Milwaukee.

St. Louis, Mo.—The Midland Automobile Co., which has leased a corner at Tenth and Locust streets, will open for business soon with a full line of Midland cars. E. W. Nothstine, formerly manager of the local Buick house, is head of the company. With him are P. P. Lewis, of



Buffalo, N. Y.—Superior Motor Vehicle Co., capital stock \$200,000, to manufacture and deal in motor vehicles; incorporators, H. A. Kamman, J. W. Lansing and I. T. Gleason.

New York—Firestone Tire and Rubber Co. of New York, capital stock \$50,000, to manufacture and deal in rubber tires for vehicles of all kinds; incorporators, D. C. Swander, H. S. Firestone and R. J. Firestone.

Pittsfield, Mass.—The Alden-Sampson Mfg. Co., capital stock \$300,000, to engage in a general motor car business; incorporators, L. E. Sampson and G. E. Mitchell, both of Pittsfield.

New Albany, Ind.—Indiana Specialty Works, capital stock \$10,000, to manufacture motor car parts; incorporators, A. Kahler and M. H. Kahler.

Meriden, Conn.—Connecticut Shock Absorber Co., capital stock \$110,000, to manufacture motor car devices.

New York—Anglo-American Auto Tire Co., capital stock \$1,000; incorporators, M. W. Saxe and Max Berg.

Chicago—Paul Picard Co., capital stock \$20,000, to deal in motor vehicles and accessories; incorporators, C. A. Williams, C. Christianson and L. B. Steere.

Indianapolis, Ind.—Arthur B. Brown Mfg. Co., capital stock \$10,000, to manufacture motor car tires and inner soles for boots and shoes.

Minneapolis, Minn.—Heaney Auto Co., capital stock \$50,000; incorporators, A. P. Heaney, J. M. Freeman, R. H. Greer and C. O. Jacks.

Chicago—Loop garage, capital stock \$2,500, to operate a motor car hivery and garage; incorporators, J. H. McCay, J. J. Downey and J. E. Sprigg.

Crescent, Mo., and F. S. Huey, of Eureka, Mo.

Lake Geneva, Wis.—Johnson & Anderson have opened a repair shop at 1126 Dodge street.

Kenosha, Wis.—The Kent Motor Car Co. organized several months ago to handle the Buick, has contracted for the Kissel.

Boston, Mass.—White, Ware & Co. have organized to handle the Marmon in Boston. The company has opened salesrooms at 1024 Boylston street.

St. Louis, Mo.—The St. Louis agency for the Haynes car has been taken by A. A. Franklin. He recently was with the local Johnson agency. The salesrooms for the Haynes will be at 4129 Olive street.

Newcastle, Pa.—Paul Browne Patterson and Dr. John M. Emery have formed a partnership and will handle the Ford agency in this city with headquarters at 135 Pittsburg street.

Sharon, Pa.—The Driggs-Seabury Ordinance Corporation has completed the foundations for its 200-foot addition for its machine shop. The company now is working on 1911 goods.

Philadelphia, Pa.—The Continental Motor Car Co. has leased from J. E. Lutz the first floor of 1416 Vine street, to be occupied by the company as soon as the necessary alterations are completed.

Pittsburg, Pa.—The Central Automobile Co. has leased the former garage of Urling & Co., in Broad street near Collins avenue, and will handle the Columbia and Haynes cars. A. H. McKellip will be manager.

Racine, Wis.—The J. I. Case Plow Co. has been appointed distributor for the Ohio 40 in Wisconsin, Nebraska and the three western tiers of counties in Nebraska. Its regular representatives will handle the car.

St. Louis, Mo.—The Pope-Hartford Motor Car Co., which recently incorporated for \$50,000, is having plans drawn for a garage on Delmar boulevard near Hamilton avenue. The company plans to handle the Pope-Hartford in St. Louis territory.

Pittsburg, Pa.—The Duquesne Auto Parts Co. has been formed by Walter C. Mellor, A. F. Christmas and Addison Boren, of Pittsburg, and is applying for a Pennsylvania charter. It will engage in both the manufacturing and sales business.

Omaha, Neb.—The Sweet-Edwards Automobile Co. has moved into its new garage at 2052-54 Farnam street. Although the garage is not entirely completed the company has been able to move into it. When finished it will be one of the finest in the city.

